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METHAMPHETAMINE USE AND THE MENTAL HEALTH EXPERT WITNESS IN CRIMINAL-FORENSIC CONTEXTS

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ABSTRACT

This article investigates the evidentiary value of criminal-forensic aspects of expert testimony on methamphetamine use to judicial decision-making. One cross-validated finding is that some aspects of methamphetamine are unique--viz., the risk of cerebral damage even with infrequent use of the drug, the altered perceptions and cognitions of the abuser rendering his or her credibility in reporting events a significant issue, the strong association with violence to others, and the similarity of the symptomatic picture to paranoid schizophrenia. The importance of this topic is revealed by an analysis of Hawaii state statutes and case law, as well as some Federal guidelines and cases, in addition to an analysis of the role of expert witnesses in some trial proceedings. Analysis reveals that the trier of fact typically defers to mental health experts regarding methamphetamine. Confusion and complexity reign when multiple experts, coming from different theoretical viewpoints, clinical experiences, and databases, testify in the same case. A contributing factor is that no current, integrated approach to the forensic issues concerning methamphetamine use has been heretofore available.

The authors review the literature through 1998 which deals with the empirical, forensic, and clinical aspects of methamphetamine use, including its prevalence and effects, *Daubert* considerations for acceptance of expert testimony, victim/witness credibility, competency to confess and to stand trial, criminal responsibility, extreme emotion, and dangerousness. The statutes, case law, and forensic psychological/psychiatric practice of clinicians are scrutinized in order to represent perspectives of both the prosecution and the defense. Although information regarding methamphetamine-related criminal behavior is rudimentary and continuously evolving, legal issues are addressed within both an existing framework of knowledge and recommended models to assess the decision path and proffered conclusions of the expert.

Contributors and Acknowledgments

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Epidemiology

Methamphetamine abuse is fast becoming ubiquitous. Various studies by the United Nations show that methamphetamine is consumed in almost every region of the world, is fast outstripping cocaine and heroin as the drug of choice, and is the single most frequently reported illicitly manufactured drug (United Nations International Drug Control Programme, 1997). Since the mid-1980s, the world in general and the Pacific region in particular have experienced a huge increase in methamphetamine abuse, with nine times the quantity seized in 1993 than in 1978 (United Nations International Drug Control Programme, 1997). In this country, as of 1990, an estimated 5.2 million persons 12 years of age and older reported using methamphetamine at least once (National Household Survey on Drug Abuse, 1991). In 1991, 7% of respondents in a large survey reported using methamphetamine at least once, with the highest use in the 18 to 25 year old age group (Kaplan, Sadock, & Grebb, 1994).

Department of Justice statistics show that, for the period from 1990 to 1996, 64% of high school seniors could easily obtain methamphetamine. Step-by-step instructions to manufacture methamphetamine are on the Internet (e.g., see *The Leftist*, 1996). Nearly one-half of all methamphetamine users will develop psychotic symptoms, with the percentage being higher in chronic abusers (Beebe & Walley, 1995; Lynch & House, 1992). One-third of heavy users will develop bizarre, frankly psychotic behavior and will suffer hallucinations (Egan, 1997). As discussed below, psychosis can occur after only one dose (Ando, Hironaka, & Yanagita, 1996). The authors of this article have observed signs in individuals they have evaluated that are strongly suggestive of brain damage after a single usage.

The association between methamphetamine and violence has been observed repeatedly. In a recent murder case in Hawaii, a forensic psychologist testified that San Diego is considered the methamphetamine capital of the world, with methamphetamine being found in the system of 90% of violent defendants or being part of the precipitating events (*State v. Monte Young*, 1997). The theme of violence runs through all operations associated with the manufacture, sale, and consumption of methamphetamine.

Congressional testimony at the 104th Congress (Subcommittee on Crime, House of Representatives, 1995) provided examples of the strong connection between methamphetamine and violence:

> . . . some of the problems in dealing with this particular drug . . . is the high violence potenti[al]. I run a tactical team that does high violence entries of primarily clandestine drug lab type entries. There's only several teams that will do this mainly because of the hazards involved. The atmosphere can become very poisonous, explosion, chemical contamination, and violence potential, from the weapon problem with the suspects inside. So, this is one of the things that becomes very important to what I'm doing. There's, again, weapons involvement. There normally is always high velocity type weapon involvement--Mack 10's, Tech-9's, Uzis, mini Uzis, street sweepers, which is an automatic 12 gauge shotgun, these type of things. (pp. 37-38).
>
> and
>
> . . . the violence associated with methamphetamine is unparalleled. Some examples of this violence:
>
> Phoenix, Arizona police say methamphetamine is largely responsible for the 40% jump in homicides in 1994.
>
> In Contra Costa County, near San Francisco, police have found that methamphetamine is involved in 89% of domestic disputes in that county.
>
> In San Diego, rival methamphetamine smuggling rings were responsible for a series of killings that resulted in 26 deaths. Also in San Diego County, the percentage of methamphetamine detections in [arrestees] rose from 23% in the first half of 1991, to 45% during the same period in 1994.
>
> In San Luis Obispo, California, [in May 1995], local authorities requested DEA assistance in confronting spiraling violence that involved thirteen drug-related homicides, committed by gangs engaged in the production and distribution of methamphetamine in that count[y].

> In Tacoma, Washington, police report that half a dozen homicides were related to a methamphetamine organization which, among other things, pipe bombed the residence of a narcotics detective. (p. 13).

As far back as 1989, the Queen's Medical Center in Honolulu revealed that 26% of all emergency room admissions in which drugs were suspected were related to methamphetamine overdoses (Hawaii Substance Abuse Information Resource Center, 1989). During the same period, the National Institute of Drug Abuse in Hawaii revealed that 25% of neonates tested for methamphetamine, whose mothers were at high risk for methamphetamine abuse, had the substance in their system (Hastings, 1989; Hawaii Substance Abuse Information Resource Center, 1989). From 1990 to about 1994, the use of methamphetamine diminished considerably in Hawaii due to unavailability, rising again in the mid-1990s. In a 1995-1996 substance abuse study in Hawaii, the Gallup Organization determined that 15.8% of male arrestees and 18.9% of female arrestees were diagnosed as methamphetamine dependent, the highest rate of dependency for any substance except alcohol (Kroliczak, Nothaft, & Larsen, 1996). An incredible 1 out of 6 (16.4%) male arrestees and 22.7% of female arrestees reported using methamphetamine 50 or more times in the past 18 months. Currently, in Hawaii, emergency room toxicology data show that methamphetamine intoxication is two times more prevalent than cocaine, opiates, or marijuana (Buffenstein, Coel, & Combs, 1997).

A methamphetamine industry has been established in this country. Between 1990 and 1992, over 10.5 metric *tons* of the precursor ephedrine were seized (Drug Enforcement Administration, 1994). Just seven California companies are responsible for the sales of 95% of iodine and red phosphorous necessary for producing hydriotic acid, which is essential for the production of methamphetamine. The DEA considers California a "source country" of methamphetamine (Feinstein, 1997), but shipments of methamphetamine or its precursors come into this country regularly through Hawaii from Taiwan, Korea, Japan, and the Philippines (Alm, 1998). Makeshift laboratories that manufacture methamphetamine from materials found in any pharmacy and hardware stores are found more often. One such laboratory was uncovered when the perpetrators purchased a case of Trifedrine from Long's Drug Store in Hilo (Arakawa, 1998).

Neuropharmacology of Amphetamines

Amphetamines are rapidly absorbed orally and have a rapid onset of action, usually within 30-40 minutes of oral ingestion. Methamphetamine may also be taken intravenously, whereupon it has an immediate effect. Certain forms, the so-called "designer amphetamines," may be inhaled. Crystal methamphetamine, the smokable form of this drug, which is primarily found in Hawaii, has an onset time of between 5 and

20 minutes, a subjective feeling of intoxication for up to eight hours, and a half-life of 12 to 36 hours. Demethylation, or the biochemical breakdown process caused by the presence of methamphetamine in the body, is conclusive evidence that methamphetamine is being detected and not some harmless analog.

Tolerance, the requirement of progressively higher doses over time to obtain the same effect, occurs with all forms of amphetamines. This phenomenon, in part, accounts for the addictive nature of methamphetamine. Increases in methamphetamine doses from 5 mg to 1,000 mg per day in a single year are not uncommon as a reflection of rapid tissue tolerance in methamphetamine users (Trustees of Indiana University, 1995). Due to tolerance in long-term abusers, doses as high as 20 times the initial dose may be needed to achieve the same high (Haight-Ashbury Training Manual, 1997). This suggests that knowledge of the behavioral indicia of intoxication, abuse, and dependence, in addition to an understanding of its neuropharmacology, is indispensable. When compared with other psychostimulants, such as cocaine, methamphetamine has been shown to be less physically addictive in animals studies (Dackis & Gold, 1990). Nevertheless, the psychological addictive potential of methamphetamine is extremely high, with many abusers continuing their use despite knowing that their abuse is likely to cause florid psychotic symptomatology such as command hallucinations and disorganized cognition.

The primary effects of methamphetamine are related to the release of catecholamines, particularly dopamine, from presynaptive neurons in the brain. The drug appears to exert its greatest effect on dopaminergic neurons projecting from the ventral tegmental area to the cerebral cortex and the limbic system, nerve bundles commonly referred to as the "reward pathway" that is thought to be implicated in methamphetamine's addictive potential (Kaplan, Sadock, & Grebb, 1994).

The designer amphetamines (e.g., MDMA, MDEA, MMDA, DOM) release dopamine, norepinephrine, and serotonin. As a result of its effect, individuals ingesting these substances experience both stimulant and hallucinogenic effects. Thus, the designer amphetamines exert a broader spectrum of effects than methamphetamine itself.

Cerebral Injury and Death from Methamphetamine Use

The cerebral damage caused by methamphetamine intoxication can be formidable. Prolonged use is associated with injury to the dopamine system. Essentially, continued methamphetamine use likely leads to axonic degeneration of the dopamine axon terminals in the striatum, frontal cortex, nucleus accumbens, and amygdala. Hypersensitization of neurons occurs, for example, in increasing the sensitivity of D-1 receptors. It is important to note that changes in catecholamines alone

cannot explain behaviors in humans when they are methamphetamine intoxicated.

Animal studies across several species demonstrate that high dosages of methamphetamine damage nerve cells (Swan, 1997). In rats, one high dose is enough to cause damage to neurons; prolonged administration increases the number of neurons which are killed off (Swan 1997). In squirrels, a single dose of MDMA (which is structurally similar to methamphetamine and mescaline) in only slight doses significantly damages brain neurons that produce serotonin. Twelve to 18 months after exposure, serotonin-producing nerves grow abnormally or not at all. MDMA selectively damages serotonin neurons in virtually all species (Mathias, 1997). Buffenstein et al. (1997) showed through SPECT scanning of methamphetamine abusers in Hawaii that brain deterioration continues for months after abstinence, a finding which, if consistently cross-validated, suggests another unique and pathological feature of methamphetamine.

Not surprisingly, high doses of methamphetamine can cause death. A male arrestee died with a blood content greater than 60 mg per liter after swallowing a "baggie" of methamphetamine (Logan, Weiss, & Harruff, 1996). A toxic reaction in humans can occur at levels as low as 50 milligrams of pure methamphetamine for non-tolerant users. Ischemic stroke is associated with methamphetamine inhalation (Rothrock, Rubenstein, & Lyden, 1997). Massive strokes are fairly common. The senior author conducted a neuropsychological evaluation of a 30-year-old, previously normal, federal employee who suffered multiple strokes and a vascularizing dementia after a single methamphetamine intoxication. Although a family history of strokes for members in their 60s and 70s was revealed, representing a possible vulnerability for the client, methamphetamine appeared to cause the client's strokes long before they would normally be expected, given his family history. Methamphetamine taken intranasally has caused caudal thalamic infarctions in an abuser (Sachdeva & Woodward, 1989). Ischemic stroke is associated with methamphetamine inhalation (Rothrock, Rubenstein, & Lyden 1997). More ominously, and as discussed above, preliminary data show continued destruction of brain tissue in humans several months after abstinence from methamphetamine (Buffenstein et al., 1997).

In sum, much data suggest there is no way of establishing a "safe" or "unsafe" level of methamphetamine for a particular person, or even for the same person with repeated doses. With other drugs, and certainly with alcohol, use of the particular substance must continue for a given time period (e.g., 12 months) and be accompanied by maladaptive behavior in order to qualify for a DSM-IV diagnosis of substance abuse. Preliminary data suggest that this is in marked contrast to methamphetamine abuse where a small number of intoxications can create catastrophic changes in physical and mental functioning.

The Unpredictable Effects of Methamphetamine

There are multiple factors, other than its untoward effects on non-tolerant users, which cause the effects of methamphetamine to be unpredictable. The properties of methamphetamine themselves can create unpredictable reactions. One reason for this is impurities in the drug. Methamphetamine manufactured in clandestine labs is frequently impure (Kram, Kruegal, & Kruegal, 1977; Sinnema & Verweij, 1981). Methamphetamine can be used to "cut" other drugs, which means that interactive effects must be considered. Also, a variety of toxic chemicals can be used as *precursors*, from which methamphetamine can be formed (e.g., ephedrine and pseudoephedrine, Benzyl Chloride, Benzyl Cynanide, Methylamine), or as *reagents*, substances which react with precursors (e.g., Hydriodic Acid, Iodine, Mercuric Chloride, Sodium Cyanohydridoborate), or as *solvents* (e.g., ethanol, ethel chloroform, acetone). Residues of these substances may contaminate the final product.

There are two basic methods for producing methamphetamine, each of which take two to four days to produce a batch. One method involves the reaction of phenyl-2-propanone (P-2-P), phenylacetine, and methylamine. The other method uses ephedrine as a precursor chemical which does not necessitate use of most controlled precursors. The latter, referred to as the ephedrine/red phosphorus method, requires the use of hydrogenator. Red phosphorous is on the list of less restricted chemicals in many states. The knowledge that this chemical can be obtained from the fireworks and matchmaking industries has been widely disseminated on the Internet since 1996 (e.g., *see* deadlock@paranoia.com). The striking pad on match covers is about 40% red phosphorous and 30% antimony sulfide, with lesser amounts of glue, iron oxide, manganese dioxide, and glass powder. Some of these chemicals alone or in combination can cause toxic reactions in the user. In addition, the ephedrine/red phosphorus method often produces "garbage" methamphetamine. Unless simple "precautions" are followed, which are typically absent with makers who are often chronic methamphetamine users themselves, high amounts of iodoephedrine and azirine are produced as contaminants.

Most methamphetamine is not the clear, pure hydrochloride salt we typically associate with the drug, but contains impurities that can be identified by their color as follows:

RED: Methamphetamine from pseudoephedrine; the red coloring of the tablet was not washed away.

ORANGE: Ephedrine Sulfate was used; the sulfate was reduced to sulphur.

PURPLE: The iodine from the phosphorous-iodine reaction was not chemically washed.

GREEN: Copper somehow made its way into the mixture, possibly because of the mixing vessel.

BROWN: A tablating agent or oxidized red coloring was present in the reduction.

Use of drugs other than methamphetamine affects the user's response to methamphetamine. Cocaine intoxication causes cross-tolerance to discriminative and reinforcing effects of methamphetamine in animal studies (Peltier, Li, Lytle, Taylor, & Emmett-Oglesby, 1996). Polydrug abuse is the rule rather than the exception in adult offenders (Kassebaum & Chandler, 1994). Repeated use of methamphetamine alone can decrease sensitivity and increase tolerance to more methamphetamine (Ando et al, 996). Even innocuous foods can cause cross-reverse tolerance (i.e., sensitivity) to methamphetamine. In many users, caffeine increases sensitivity to the effects of methamphetamine (Ando et al., 1996). Cocaine, L-dopa, and a variety of other substances have been associated with cross-reverse tolerance. Most abusers are aware of this phenomenon and will deliberately attempt to recreate the effects of methamphetamine by using these substances when methamphetamine is unavailable. Alcohol, a central nervous system suppressant, is commonly used by addicts to decrease the effects of amphetamines, especially during withdrawal periods.

The common theme from the literature is that methamphetamine causes a lasting sensitivity to relapse. Various animal studies cited above (e.g., *see* Ando et al., 1996) suggest that relapse into states resembling methamphetamine intoxication can be triggered by environmental stress. These findings have not been generalized to humans. Replication of these findings for humans would suggest that the sudden onset of a state resembling a paranoid state could occur months or even years after an individual's last intoxication from methamphetamine.

The Symptomatic Patterns

The clinical symptoms of methamphetamine use are primarily sympathomimetic in nature and are well-documented in the human and animal literature (Ando et al., 1996; Ashizawa et al., 1996; Beebe & Walley, 1995; Chuck, Williams, Goldberg, & Lubniewski, 1996; DeVito & Wagner, 1989a, 1989b; Logan, Weiss, & Harruff, 1996; Lynch & House, 1992; Peltier et al., 996; Rothrock, Rubenstein, & Lyden, 1988; Sachdeva & Woodward, 1989; Tadokoro & Kuribara, 1986; Tohhara, Kato, & Nakajima, 1990; Wolkoff, 1997). At low doses, methamphetamine causes generally positive effects, such as increased alertness, energy, euphoria, elevated self-confidence, persistent activity and work, increased talkativeness, increased sexual pleasure and hypersexuality, a sense of well-being, increased strength, and a loss of appetite. The ego-syntonic, pleasurable nature of methamphetamine intoxication explains its persistence as well as the addictive cycle which usually emerges.

Table 1 depicts methamphetamine intoxication and its general effects on violence potential and reality testing. The increase in violence potential and the decrease in reality testing are associated with increasing dosages. Note that reality testing in homicides may be preserved under mild effects of methamphetamine but that delusional homicides are the hallmark of severe impairment from this drug.

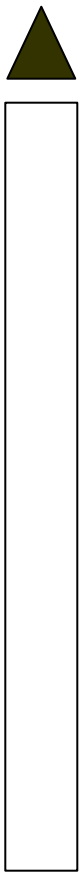
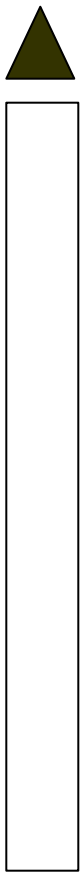
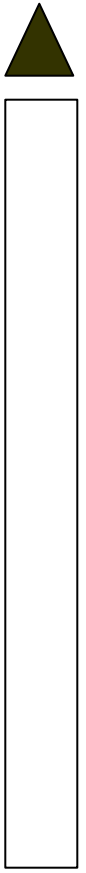
Higher doses of methamphetamine may result in negative symptoms such as disorganized or purposeless physical activity, tremors, muscle tics, slurred speech, muscle spasms (hyperflexia), motor instability, incoordination, gait ataxia, bruxism (i.e., teeth grinding), and athetosis (e.g., as in strange motor movements). Affective symptoms include agitation, restlessness, rage, panic, and anxiety. Somatic sensations include numbness of the skin and limbs. Hallucinations may occur as well as strong feelings of paranoia with a severe amphetamine-induced psychosis. Most high doses of methamphetamine are associated with a clear sensorium. Violent behavior toward others with increased risk-taking behavior has been observed frequently. Hyperthermia (extreme rise in body temperature) is common. At high dosages, difficulty with urination, irregular heartbeat, convulsions, stroke, coma, and death have occurred.

The period following intoxication ("coming down" or "on the crash") is characterized initially by restlessness, irritability, and a craving for the drug, along with fatigue and long periods of sleep. Confusion, disorientation, and hunger are common during this period.

Chronic symptoms of methamphetamine use include motor problems, depression, irritability, fatigue, exhaustion, and formication (delusions of insects crawling on the skin). Persisting neuropsychological symptoms associated with chronic methamphetamine use have been noted in animal and human investigations. Such symptomology includes visual-spatial disturbances, memory encoding and retrieval problems, lowered attention and concentration (especially selective attention), and executive dysfunction such as delayed responses and perseveration. A long-lasting amotivational syndrome, probably associated with dopamine depletion, often sets in. Circadian variations upset the sleep-wakefulness cycle. Flashbacks associated with threatening stimuli have been noted. Symptoms similar to paranoid schizophrenia, a disorganized lifestyle, persistent delusions, poor judgment, and irresponsibility have been observed. As discussed earlier, the user may realize that visual and auditory hallucinations stem from methamphetamine use, but will continue with the pathological behavior anyway. A diminished social life with compromised coping abilities is a natural consequence. Fatal liver, heart, kidney, and lung disorders, as well as brain injury due to cerebral bleeds and other factors, have been implicated. There is a lowered resistance to disease. Acne, sores, corneal ulcerations, and skin disorders such as dry itchy skin may occur. As alluded to earlier, a chronic reverse tolerance (i.e., sensitivity) to a variety of chemicals including cocaine, ephedrine, L-dopa, and morphine often sets

Table 1[1]

METHAMPHETAMINE INTOXICATION

Duration and Dose	Methamphetamine Intoxication	Methamphetamine Delirium	Violence Potential	Methamphetamine Delusions	Impairment Reality Testing
	Euphoria Initial decreased anxiety Disinhibition Heightened interest in the environment Increased self esteem Clear sensorium without cognitive confusion or hallucinations Extreme impulsiveness including violence Irresponsibility or disinhibition Impaired judgement Grandiosity Atypical generosity Hypersexuality Hypervigilence Compulsive repetitive actions Extreme psychomotor activation Mania Psychosis or Bipolar Affective Disorder	Anxiety and irritability increase sometimes resulting in extreme paranoia or panic like delirium. Panic attack sympathetic discharge with fear of impending death. Disorientation similar to organic delirium with alteration in perception of time, place and person. Stimulant overdose.		Occur in as many as 2/3 of chronic users. Note that paranoid delusion can be experimentally induced by prolonged amphetamine administration. Delusions are related to amount and duration rather than subjects predisposition to psychosis (Bell, 1973). Reality testing may be preserved if the effect is mild but delusional homicides do exist when reality testing is severity impaired. Delusions last longer than for cocaine, often for several days to months.	

[1] Adapted from Treatment of Psychiatric Disorders, 2nd Edition, Volume I, edited by Glen O. Gabbard, M.D. American Psychiatric Press, 1995, pp. 706-720.

in. Relevant to forensic issues, methamphetamine users may use such drugs as a substitute for methamphetamine and amphetamine psychosis may be induced or exacerbated by such drugs (Tadororo & Kuribara, 1986). Weight loss is usually striking, along with malnutrition, avitaminosis, and other problems in nutrition and appetite.

Table 2 presents the symptoms of methamphetamine withdrawal. The effects on the user's mood during this period are considerable. Violence potential is increased during withdrawal, furthered by an entrenched delusional system and compromised ability to cope.

Diagnosing Methamphetamine Syndromes

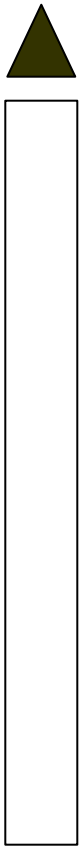
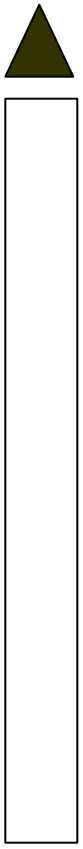
Terms used by mental health experts have diverse meanings and one should not assume that he or she understands the meaning of expert testimony unless those terms are defined explicitly. The expert should employ the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV, American Psychiatric Association, 1994) classification system to differentiate among methamphetamine intoxication, abuse, dependence, and withdrawal or other special symptoms of methamphetamine-induced conditions.

Absent combinations of drugs (e.g., polysubstance dependence), the possibilities for methamphetamine-related diagnoses in DSM-IV (listed under Amphetamine or Amphetamine-like disorders because of common properties and general arousal effects) are as follows:

Code	Term
304.40	Amphetamine Dependence
305.70	Amphetamine Abuse
292.89	Amphetamine Intoxication
292.0	Amphetamine Withdrawal
292.81	Amphetamine Intoxication Delirium
292.xx	Amphetamine-Induced Psychotic Disorder
.11	With Delusions
.12	With Hallucinations
292.84	Amphetamine-Induced Mood Disorder
292.89	Amphetamine-Induced Anxiety Disorder
292.89	Amphetamine-Induced Sexual Dysfunction
292.89	Amphetamine-Induced Sleep Disorder
292.9	Amphetamine-Related Disorder NOS

Table 2[1]

METHAMPHETAMINE WITHDRAWAL

Duration and Dose	Acute Withdrawal: The Crash	Chronic Withdrawal and Mood Dysfunction Note: Meth is physiologically as well as psychologically addictive but the symptoms are primarily expressed psychologically.	Violence Potential
	Recovery in most low dose first time users ↕ Mild depressed mood and anxiety. ↕ Severe depression sometimes suicidal with agitation. ↕ Craving with sometimes commission of crimes to obtain money. ↕ A wish to escape from the hyper stimulated dysphoria with increased use of sedative drugs and alcohol to induce sleep. ↕ Hyper-somnolence with Hyperphagia ↕ Unipolar depression in some, withdrawal and chronic mood dysfunction in chronic abusers.	Decreased capacity to perceive reward or pleasure. Follows several hours to three or four days after the crash after a period of hyper-somnolence. Increased anxiety Inactivation Irritability Restricted feelings of pleasure in drug free life. High anxiety Severe depression Loss of temper Mood disorders	

[1] Adapted from Treatment of Psychiatric Disorders, 2nd Edition, Volume I, edited by Glen O. Gabbard, M.D., American Psychiatric Press, 1995, pp. 706-720.

Only two of these conditions (Codes 292.89 and 292.81) denote methamphetamine intoxication at a particular time. An expert's diagnosis of methamphetamine abuse or dependence for the time of an alleged offense, for example, does *not* imply that the affected person was methamphetamine intoxicated before or during the commission of that alleged crime. Both abuse and dependence refer to the emergence of a maladaptive pattern within a 12-month period but, as we have seen, that pattern may be triggered by short-term usage.

As a caveat, although these diagnoses are helpful, they can imply greater precision than is, in fact, present. Standards should be improved to specify the degree of change and to separate normal alterations of consciousness from pathological states. Until that occurs, we are left with a rudimentary classification system. Using DSM IV criteria, a diagnosis of methamphetamine *intoxication* for a particular time requires that the following occur:

A. Methamphetamine use shortly before or during a relevant event. An altered state of consciousness must be present, even though metabolites may still be in the body from previous methamphetamine use or from other substances.

B. Clinically significant maladaptive behavioral *or* psychological changes (e.g., euphoria or affective blunting; changes in sociability; hypervigilance; interpersonal sensitivity; anxiety, tension, or anger; stereotyped behaviors; impaired judgment; or impaired social or occupational functioning) that developed during, or shortly after ingestion of methamphetamine.

C. Two (or more) of the following, developing during, or shortly after, ingestion of methamphetamine:

(1) tachycardia or bradycardia
(2) pupillary dilation
(3) elevated or lowered blood pressure
(4) perspiration or chills
(5) nausea or vomiting
(6) evidence of weight loss
(7) psychomotor agitation or retardation
(8) muscular weakness, respiratory depression, chest pain, or cardiac arrhythmias
(9) confusion, seizures, dyskinesias, dystonias, or coma

D. The symptoms are not due to a general medical condition and are not better accounted for by another mental disorder.

According to DSM-IV, the diagnosis should specify whether delusions or perceptual disturbances (e.g., hallucinations, sensory illusions) occurred in the absence of delirium. Again, these are not precisely separable from normal levels of suspicion or normal mild sensory distortion. Sensory interpretation--including distortion--is fundamental to all perception. By convention (and assuming the accuracy of the defendant's report), intact reality testing means that the accused knew that the perceptual disturbances were induced by methamphetamine.

When perceptual disturbances occur in the absence of such knowledge, a diagnosis of Methamphetamine-Induced Psychotic Disorder, with Hallucinations (or sensory illusions) should be made, as methamphetamine psychosis closely resembles paranoid schizophrenia. The clinical experiences of some of the reviewers of this article indicate that delusions and hallucinations are not the equivalent of loss of contact with reality (e.g., many schizophrenics and methamphetamine abusers suffering from psychotic symptoms can shift immediately from delusional and/or hallucinatory activity to respond to the realistic requirements of a situation).

The diagnoses of Methamphetamine-Induced Psychotic Disorder, Mood Disorder, Anxiety Disorder, Sexual Dysfunction, Sleep Disorder, and Not Otherwise Specified (NOS) conditions (as in other symptoms not included in the above conditions) imply intoxication *or* withdrawal from methamphetamine when the symptoms are in excess of those usually associated with the intoxication or withdrawal symptoms but only when the symptoms are sufficiently severe to warrant independent clinical attention. For clarity, the evaluator must specify whether those methamphetamine conditions occurred with onset during intoxication or with onset during withdrawal.

United States Supreme Court Decisions Regarding Methamphetamine

A search for United States Supreme Court cases involving methamphetamine usage revealed a decidedly conservative stance, although dissenting opinions reflected support for defendants' and Constitutional rights. The few cases uncovered involved sentencing guidelines, entrapment procedures, waiver of plea bargain discussion inadmissibility and coercion in the plea bargaining process, hearsay evidence, and the right to cross examination.

For example, in *Fowner v. United States* (1992), the Court upheld the lower court's ruling that sentencing based on the amount of a drug could reflect not just the amount for which the defendant was found guilty but also additional material that constituted a non-drug waste product. Similarly, in *Kinder v. United States* (1992), the

lower court was upheld in applying a sentence that reflected an amount of a drug that the defendant had referred to in the course of discussions but was not the amount on the basis of which conviction was obtained by way of a plea.

Significant issues arise in the area of entrapment. Investigation of conspiracies to manufacture and sell drugs often involves undercover work and so-called "sting" operations. In such efforts, enforcement agents participate in criminal enterprises as part of obtaining court-worthy evidence. A substantial issue focuses upon the individual's predisposition to commit a given crime. The question involves whether, but for the activity of the government agent, the individual would have remained a law-abiding citizen. The original case involved a reversal of a conviction during the prohibition era (*Sorrells v. United States*, 1932). However, in *United States v. Russell* (1973), an agent provided an essential and extremely hard to obtain ingredient (phenyl-2-propanone) which is a necessary component *used only for* the production of methamphetamine. There had been considerable efforts by law enforcement authorities to end or discourage its sale even to persons licensed to possess it. The Court held that because the defendant was not an unwary person but, in fact, was a very active criminal, his claim of entrapment was without merit. Therefore, the initial appeal that reversed his conviction was itself reversed and the defendant's conviction was upheld.[1]

The strongly worded dissenting opinion in *Russell* cited other case law to support its position: "The Government may set decoys to entrap criminals. But it may not provoke or create a crime and then punish the criminal, its creature" (*Casey v. United States*, 1928). It was noted that the issue should center not upon the predisposition of the defendant but rather on the behavior of the Government. The dissent took the position that ". . . it is the Government's duty to prevent crime, not to promote it." Interestingly, the controlling factor for the dissent was the relative unavailability of this ingredient. The government had argued that this very unavailability demonstrated the awareness and intent of the defendant who had not been able to find it elsewhere until its provision by the government agent.

Plea bargaining is the known vehicle for much of U.S. justice. Certain rules pertain to plea discussions, including that the contents of those plea bargaining discussions may not be later used against the defendant unless that person enters into a waiver. The question then becomes whether or not entering into such a waiver is voluntary and knowing or in some way coerced. Given the stakes, the potential for relatively powerful coercive factors to enter the picture clearly exists. It was on these

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[1] This case demonstrates the difference between State and Federal law regarding entrapment. The dissenting opinion is more in line with the law on entrapment under Hawaii law.

grounds that the Court considered *United States v. Mezzanatto* (1995). The *Mezzanatto* Court ruled that as long as the defendant made the waiver in a knowing and voluntary fashion, no Constitutional guarantees or procedural rules that exist to support the plea bargain process were violated. The dissent was instructive in that it was noted that the next steps might allow defendants to waive their rights against self-incrimination with their statements being used as affirmative evidence against them at trial. In the *Mezzanatto* case, the waiver consisted of an agreement that statements made during the plea bargaining process could be used to impeach the defendant should his testimony at trial warrant same (presuming that the plea bargain failed). No plea bargain was struck. Mezzanatto's statements then were used to impeach his subsequent presentation. (He claimed he was not really involved in the methamphetamine production and thought that the other party was using a laboratory to provide the CIA with plastic explosives. Since the investigation included an undercover officer who had provided him with materials that he took to that laboratory, and because he had talked with that officer about those materials and their nature and purpose, this somewhat creative defense at trial did not serve the defendant well.) Cross-examination included references to statements the defendant had earlier made in the course of the plea bargain process that bolstered the government's case as to his awareness of and role in the operation.

Another admissibility issue challenged the confrontation clause included in the Sixth Amendment to the Constitution. Hearsay evidence is generally excluded from the courtroom since there can be no cross-examination of the declarant of the statements. The right of cross-examination is basic to the adversary process. However, exceptions to the hearsay rule have been allowed under certain conditions, including unavailability of a witness and trustworthiness of the statement. In *United States v. Inadi* (1986), the government had recorded statements of a co-conspirator who subsequently failed to appear at trial. Furthermore, defense did not make any effort to obtain the presence of this individual. The Supreme Court took the position that the co-conspirator's statements were admissible on two grounds: the confrontation clause has, as one of its purposes, the pursuit of truth; and delays and other practical matters may make witnesses unavailable and place an undue burden upon the government.

A number of cogent points were raised by the dissent. First of all, it was noted that co-conspirators, themselves engaged in criminal enterprise, may or may not be factual in their communications and that there is certainly no reason to presume that they are such. In fact, criminals may communicate with each other to mislead. The fact that they are discussing an enterprise does not mean that either one of them speaks the truth. Additionally, both criminals and non-criminals speak in casual and often ambiguous fashion, and the particular evidence of this case contained many ambiguous statements. Absent the opportunity to cross examine the individual making the

statements, there was no chance to properly clarify the meanings that those statements might have had.

As the above decisions illustrate, the posture of the Court, when dealing with amphetamine-related cases, leans toward conservatism and support for law and order at the expense of concern for defendants' rights or dangers of Constitutional erosion.

Daubert Issues: Who May Testify as Experts?

In *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993, 1995), the United States Supreme Court considered an appeal from the Ninth Circuit Court of Appeals regarding the admission of expert testimony on the issue of whether or not maternal use of Bendectin caused human birth defects. The plaintiffs were two minors who claimed that they suffered limb reduction birth defects because their mothers had taken Bendectin for morning sickness. The District Court had determined that the plaintiffs failed to meet the "*Frye* test" of "general acceptance" for admission of expert testimony and granted summary judgment in favor of the defendants on the basis of their expert's affidavit stating that Bendectin had not been shown to be a risk factor for human birth defects. The plaintiffs sought to introduce affidavits from eight other scientists on the correlation between Bendectin and limb defects. The Ninth Circuit, relying on *Frye*, affirmed the District Court's ruling (1991).

On appeal, the United State Supreme Court overruled *Frye v. United States* (1923), in which it had been held that expert opinion based on scientific technique is inadmissible unless the technique is "generally accepted" as reliable in the relevant scientific community. The Court held that the *Frye* decision was superseded by the adoption of the Federal Rules of Evidence, in particular Rule 702, which provides that expert testimony is admissible "if scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue. . . ." Rule 702 does not require "general acceptance" as a prerequisite to admissibility.

Under Rule 702, "the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Daubert*, 509 U.S. at 589. When faced with a proffer of expert scientific testimony, the trial judge must first determine, pursuant to Rule 104(a) of the Federal Rules of Evidence, "whether the expert is proposing to testify to (1) scientific evidence that (2) will assist the trier of fact to understand or determine a fact in issue. This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and whether that reasoning or methodology can be properly applied to the facts in issue." *Id*. at 592-3. Among the factors to be considered in making this determination are (1) whether a theory or technique can be and has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or

potential rate of error and the existence and maintenance of standards controlling the technique's operation; and (4) whether the theory or technique is generally accepted within a relevant scientific community. *Id*. at 593-4. The focus of the court's inquiry "must be solely on principles and methodology, not on the conclusions that they generate. *Id.* at 595. The Supreme Court remanded the case to the Ninth Circuit for application of the two-part test to determine whether or not the expert testimony was properly admissible on the question of whether Bendectin caused the plaintiffs' limb defects.

On remand, the Ninth Circuit noted that, pursuant to the Supreme Court's ruling, the court

> must engage in a difficult, two-part analysis. First, we must determine nothing less than whether the experts' testimony reflects "scientific knowledge," whether their findings are "derived by the scientific method," and whether their work product amounts to "good science." Second we must ensure that the proposed expert testimony is "relevant to the task at hand," i.e., that it logically advances a material aspect of the proposed party's case. The Supreme Court referred to this second prong of the analysis as the "fit requirement."

43 F.3d 1311, 1315 (1995), quoting *Daubert*, 509 U.S. 579 (internal citations omitted). The court's task was "*to analyze not what the experts say, but what basis they have for saying it*." *Id*. at 1316 (emphasis added). To perform their "gatekeeping role," courts

> must satisfy themselves that scientific evidence meets a certain standard of reliability before it is admitted. This means that the expert's bald assurance of validity is not enough. Rather, the party presenting the expert must show that the expert's findings are based on sound science, and this will require some objective, independent validation of the expert's methodology.

Id. at 1316. The Ninth Circuit noted that

[o]ne very significant fact to be considered is whether the experts are proposing to testify about matters growing naturally and directly out of research they have conducted independently of the litigation, or whether they have developed their opinions expressly for purposes of testifying. That an expert testifies for money does not necessarily cast doubt on the reliability of his testimony, as few experts appear in court merely as an eleemosynary gesture. But in determining whether proposed expert testimony amounts to good science, we may not ignore the fact that a scientist's normal workplace is the lab or the field, not the courtroom or the lawyer's office.

Id. at 1317. The fact that an expert's testimony is based on research conducted independent of the litigation "provides important, objective proof that the research comports with the dictates of good science." *Id*. If the proffered expert testimony is not based on independent research, the party proffering the testimony must come forward with other objective, verifiable evidence that the testimony is based on "scientifically valid principles." *Id*.

In sum, experts need to subscribe to the notion that scientific methodology is based on hypotheses testing, distinguishing it from other fields of human inquiry. In *Daubert*, the Supreme Court stated that vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky, but admissible, evidence presented by the expert.

Table 3 presents sample *Daubert* questions for experts regarding methamphetamine.

As an example of a case in which *Daubert* was applied, in *United States v. Sylva, Saya, and Burke* (1996), the U.S. Attorney successfully argued that the defendant's expert, G.B., a psychiatrist/attorney in Honolulu, used improper methodology to come to conclusions concerning the effects of prolonged and active polysubstance abuse on the credibility of the government's chief witness, Alfredo Bunag[2]. Dr. B. "intended to testify how Bunag's polysubstance abuse with particular concentration on his crystal methamphetamine use affect[ed his] 'ability to remember, relate, and distinguish historical events.'" In an Order Denying Defendant Sylva's Proffer of Expert Testimony for Failure to Meet the Daubert Standard, filed December 12, 1996 in the above-referenced case, the Court noted that under *Daubert*, "if a party objects and 'raises a material dispute as to the admissibility of expert scientific evidence, the district court must hold an in limine hearing (a so-called *Daubert* hearing) to consider the conflicting evidence and make findings about the soundness and reliability of the methodology employed by the scientific experts." Order at pp. 2-3, quoting *Daubert*, 43 F.3d at 1318, n. 10.

In concluding that Dr. B.'s opinions did not fulfill any of the factors set forth in *Daubert*, the Court reasoned as follows:

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[2] The Assistant U.S. Attorney in this case retained the senior author as a consultant. The senior author prepared a list of cross-examination questions applying the *Daubert* standards. A sample of these questions, which can be used in connection with other *Daubert* issues, is provided in Table 3.

TABLE 3

Daubert Questions for Experts Regarding Methamphetamine

1. Using your methods of generating findings from your database, what is the rate of error in coming to conclusions for each of the procedures employed? If you do not have these statistics, why don't you have them?

2. Have you published any articles on the theory or clinical practice on methamphetamine abuse? Have you published any peer reviewed books or articles?

3. Are you aware of the literature on the effects of methamphetamine on memory and perception? If so, cite several empirical articles.

4. In coming to conclusions in this case, what is the reliability, validity, and relevance of your findings?

5. Are you testifying based on scientific knowledge and methodology that is scientifically valid? Doesn't that imply that you are aware of the scientific investigation in methamphetamine abuse for studies that have used a sound methodology to connect the literature to this particular case?

6. What is a decision path? Doesn't a decision path illustrate retrospectively that the expert reasoned his or her way from the database to ultimate conclusions? What is your decision path in this case? What is the accuracy of that decision path?

7. What data do you have to support the competing hypothesis that the witness/defendant/victim in this case was methamphetamine intoxicated and therefore may have affected your findings?

8. Isn't it true that one way to validate competing hypotheses is by examination of corroborating data? Have you done that in this case? What data in this case suggest that you are wrong in your conclusions? Isn't it true that all experts should consider competing hypotheses? Isn't hypothesis testing the essence of science?

9. Isn't it true that the literature states that the purity of methamphetamine can vary widely as a function of precursor agents, additives, and other chemicals? To your knowledge, which precursor agents and additives were associated with the methamphetamine this person abused?

10. Did you cross-validate the memory of the witness in this case? How would you do that?

11. Isn't another way of evaluating the impact of methamphetamine abuse to look at behavioral effects? What behavioral effects do you see in this case?

12. Given all of the above, how confident are you that you exhibited in coming to your conclusions a sound methodology and that you demonstrated a connection between the methodology and the facts of this case?

13. Isn't it true that your conclusions regarding methamphetamine in this case may be faulty if the database on which you relied is incomplete or flowed in some other way? You did not interview family members who had knowledge of his drug habit. What assumptions are you making in failing to consider that data?

. . . First, Dr. [B.'s] opinion is not supported by scientific methodology and procedures. Dr. [B.] never conducted a direct psychological examination of Bunag. Nor did Dr. [B.] conduct neuropsychologic testing on Bunag which would have involved corroborating Bunag's memory with other reliable sources. Dr. [B.] did not even witness Bunag's testimony in this case nor listen to recordings of his pre-arrest conversations nor read any transcripts of his testimony. Rather, Dr. [B.] planned to base his testimony on an affidavit containing hearsay accounts of Bunag's drug use by four unknown "witnesses." The affidavit did not even suggest the amount of polysubstance abuse other than with respect to ice. Not only is such evidence inherently unreliable; but Dr. [B.] admitted, it is a methodology unendorsed by any scientific survey, literature or publication. In fact, Dr. [H., another psychiatrist] went so far as to say that experts in the field could not reasonably rely on such testimony to render an opinion. Accordingly, the Court finds that Dr. [B.] employed unreliable methodology in forming his expert opinion.

Assuming Dr. [B.'s] methodology was accurate, moreover, Dr. [B.] failed to cite with particularity any articles supporting his underlying thesis: that prolonged crystal methamphetamine use has any effect on memory. The government's witness, Dr. [H.], explained this omission by testifying that there is no literature at present which holds that methamphetamine use has any effect on memory. Accordingly, the Defendant also failed to establish that Dr. [B.'s] theory or technique has been subjected to peer review and publication. (footnote omitted).

Even if methamphetamine use did affect one's memory, both expert witnesses testified that a number of individual variables such as stress, intellect, varying tolerances to the drug and other health factors must be considered before truly determining the effects of the drug. Here, Dr. [B.] knows nothing about Bunag's individual characteristics. Accordingly, without some consideration of Bunag's characteristics, Dr. [B.'s] opinion would be unreliable. Moreover, Dr. [H.] testified that the predictability of the impact of sustained usage of ice is not reliable.

The presence of individual characteristics goes to another factor in *Daubert*: the known or potential rate of error. Defendant, however, put forward no evidence on the rate of error in predicting the effects of crystal methamphetamine on memory loss.

In sum, all the Defendant has put forward is Dr. [B.'s] own testimony concerning the reliability of his opinion. However, "bald assurances of validity" simply do not suffice for *Daubert. Daubert v. Merrell Dow Pharmaceuticals*, 43 F.3d 1311, 1315 (9th Cir. 1995).

The Court concluded that Dr. B.'s testimony did not concern scientific knowledge for purposes of *Daubert*. The Court also ruled that Dr. B.'s testimony failed to meet the second prong of *Daubert* that the testimony must aid the trier of fact. The Court noted that the jury "had ample opportunity to evaluate the memory and credibility of Bunag" during his three days of testimony, which included aggressive cross-examination on his drug use and his memory. Dr. B would also have been able to compare his testimony to tapes of pre-arrest conversations. Because the jurors' exposure to Bunag for over 30 hours would allow them to evaluate his memory and credibility, Dr. B.'s further testimony would not aid the trier of fact in determining whether or not Bunag had the capacity to "remember, relate and distinguish historical events." Order at p. 6.

The Court also noted the absence of cases in which expert testimony concerning the effect of drug use on a witness' ability to perceive and recall was allowed. In fact, in *United States v. Rohrer* (1983), the court stated that such testimony "threatens to usurp the jury's function of determining guilt." Agreeing with the caveat in *Rohrer*, the Court reasoned that

> [c]onfronted with an "expert," the Court fears that the jury would give undue deference to Dr. [B.'s] testimony and forfeit their own role of determining credibility. Therefore, even if Dr. [B.'s] testimony did fulfill *Daubert*, the Court would exclude it under Fed. R. Evid. § 403 because its probative value is substantially outweighed by the danger of unfair prejudice and confusion and the possibility that it would mislead the jury.

Order at p. 6.

Dr. B. presented findings based on an almost non-existent database, consisting of affidavits of two men, themselves methamphetamine abusers, who supposedly knew the government's witness. Had Dr. B. not made that connection between his knowledge of methamphetamine and the case at hand, his actions may have been allowed and he could have avoided the pitfalls described above.

In *State v. Cachola* (1993), the defendant was charged, among other things, with attempted murder of a man who testified that he (the victim) was intoxicated on methamphetamine. Expert testimony was rendered without the benefit of interviewing the victim. The difference between *Cachola* and *Sylva* was that, in the former case, testimony was based on the expert's clinical training, experience, and findings from the methamphetamine studies. No person-specific conclusions were proffered.

In *Cachola*, the senior author was qualified as an expert in forensic psychology. The court allowed opinions as to the effect of methamphetamine on memory and

perception. In addition, hypotheticals were permitted, which then allowed the defense attorney to apply findings about methamphetamine to the alleged victim's memory and perception of events. Cachola was acquitted of the attempted murder charge. The reader is referred to *State v. Fukusaku* (1997) for an additional discussion about the admissibility of scientific evidence and expert opinions and witness credibility.

Table 4 on the next page presents general strategies for cross examining experts in methamphetamine cases.

Miranda Rights, Interrogation, and Competency to Confess

Psychological and psychiatric experts are occasionally called upon to assess the ability of the defendant to render incriminating statements. The key Miranda question concerns whether a defendant can rationally and intelligently choose to waive or invoke rights to self-incrimination. Methamphetamine intoxication at the time of police questioning or interrogation, to the extent that it interferes with these cognitive capacities, raises the question of voluntariness.

Yet, voluntariness depends on the totality of the circumstances, not just the condition of the accused at the time of the questioning. It includes such factors as the context in which the questioning took place, the officers' conduct, and the extent to which the officers utilized prior incriminating statements to extract more information. Under this reasoning, it becomes highly relevant whether the questioning officers were aware that the accused was methamphetamine intoxicated.

In *State v. Samson Pebria, Jr.* (1997), a methamphetamine intoxicated, recently released prison inmate was questioned at a hospital by the arresting officer, who asked, "Do you know why you are being detained?" The accused responded, "I went grab the girl" and later stated, "I like rape her."

One finding of fact from the Intermediate Court of Appeals (No. 19) was the that the noted confusion on the part of the accused did *not* arise from the questioning by the officer. The confusion arose "because of [Pebria's] inability to recall what had occurred previously because at the time of the incident he was under the influence of ice.". Other findings of fact (Nos. 20, 21, 22), included the knowledge on the part of the detective taking the formal statement of the alleged spontaneous statement, an attempt to lead the defendant into making those statements again and to admit the motive for the alleged offense was to rape the victim. The ICA held that the original statements were obtained in violation of Miranda and that the later confession was inadmissible under the "fruit of the poisonous tree" doctrine.

TABLE 4

Expert Witness Cross-Examination Tactics for Methamphetamine Abuse Cases

Method		Principle/Example[3]	Counteraction by Expert
1.	Make the expert your witness	If you have a strong case on methamphetamine causation, create an ally instead of adversary (e.g., "You say he was severely addicted to methamphetamine?)	Anticipate and amplify on leading words/questions of cross-examiner. Be familiar with literature showing the opposite findings.
2.	Attack the expert's field	Question his entire discipline (e.g., "As a psychologist, you know nothing about the meta- the human body, do you?")	Use as opportunity for educating the trier of fact neuropsychological effects of methamphetamine
3.	Attack the expert's qualifications	No matter how well trained or experienced the expert, there are always levels he or she has not reached (often the vita is the basis for questioning)	Admit your level of expertise to the court, which hopefully includes knowledge of metham-phetamine abuse and intoxi-cation. Become better trained.
4.	Expose the expert's bias	The expert's integrity may be sale if he or she spends much time in court or charges large	Know court experience/ outcomes of cases and present them to the court.
5.	Attack the expert's (second-order) facts	Particularly suited for experts who did no factual investigation but relied on the reports of others	irectly assess defendant, ictim, or witness or do not comment on them. Answer hypotheticals.
6.	Vary the hypo-thetical	Must have a factual basis. This method reveals the decision path of the expert.	Know the decision path leading to your conclusions and therefore how varying data changes conclusions.
7.	Impeach with a treatise	If an expert differs with others in his field, he may be wrong. Easy to do in methamphetamine cases as state of the art is primitive	Do not accept a proffered treatise as authoritative, especially in a rudimentary field like methamphetamine abuse.
8.	Attack the expert directly	The only direct method, this is dangerous and should be avoided in favor of above tactics	Be thoroughly prepared; meet with your attorney prior to court.

[3] This table was adapted from J. McElhaney (1989). Nine ways to cross-examine an expert. *Journal of the American Bar Association, 9*, 99. The last column was adapted from H. Hall & R. Sbordone (1993). *Disorders of Executive Functions: Civil and Criminal Law Applications*. Boca Raton, FL: St. Lucie Press.

What is missing from most interrogations involving methamphetamine intoxication and what would be most convincing to the expert, is for the arresting officer or (later) a detective to obtain *feedback* from the defendant as to whether or not the subject understood and remembered the Miranda rights or whether interfering factors substantially prevented competency to confess. The expert should make every attempt to answer these questions in cases in which methamphetamine use is an issue.

Investigative interviewing takes place under conditions that vary widely in terms of procedure, experience and capacity of the interviewer, and environmental aspects. Studies of the interview procedure have shown considerable impact as a function of the use of leading questions and pre-biased interviewer conditions (Loftus & Palmer, 1974; Loftus & Zanni, 1975; Memon & Kohnken, 1992; Mount & Perlini, 1995; Pirolli & Mitterer, 1984).

False confessions occur with complex antecedents. They may be entirely voluntary and some such confessions may reflect mental problems. False confessions may proceed in consequence of certain later-identified personality traits. Specified pressures can lead to false confessions which have been classified as "coerced-compliant" and "coerced-internalized." In the former, a knowing incorrect admission is made to gain relief from interrogation pressure. In the latter, an individual predisposed to guilt comes to falsely believe in and make an admission to an act (*Commonwealth v. Cosmello*, 1993; Gudjonsson, 1992a, 1992b; Gudjonsson & Petursson, 1991; Kassin, 1997, 1998; McCann, 1998; Reitman, 1998).

In investigative interviews in the U.S., certain deceptive procedures are often the rule, including the provision of misinformation in order to obtain confessions by trickery (Inbau, Reid & Buckley, 1986). In contrast, in the United Kingdom, police are not allowed to use deceptive methods. All interrogations are videotaped in order to reduce coercive and illegal methods as well as to secure good evidence when confessions do occur under questioning (Gudjonsson, 1992b). Whether in the United Kingdom or the United States, the above studies have shown a limited impact of interview, content, and style of police interrogation on the production of false confessions. In general, although false confessions occur, no convincing data exists that shows that guilty parties will confess falsely to crimes in greater numbers than would be expected by chance. Other case factors have been found to be more important including the evidence, the level of the offense, and the presence of legal advice (Moston, Stephenson, & Williamson, 1992).

In a few criminal cases, substances have been used to assist in the recovery of details or repressed material, to reduce the capacity to cover up information which has been denied, or to expose false facts that were "admitted" on a malingered basis. In

general, the use of drug-assisted interviews is not recommended. Subjects are able to continue to dissimulate when under the influence of various substances, including methamphetamines. However, with methamphetamines, there are more changes in perception. These changes may involve reports of either positive or negative experiences and anxiety. There may be higher levels of attentiveness than are found among those who are given other substances, such as amobarbital. The impact on suggestibility has not been demonstrated for amphetamines, whereas it has been shown with sedatives (Rogers & Wettstein, 1977).

It should be known whether a suspect is methamphetamine intoxicated when he or she is interviewed. At relatively low doses, amphetamines improve one's capacity to attend, causes an inflated sense of self efficacy and invulnerability, and increases motor and speech activity and anxiety (Dodgen & Shea, 1997). At high doses, the individual becomes cognitively disorganized. Theoretically, vulnerability to coercion may increase. Certainly, a defense attorney should raise this issue. Further study is needed to determine the interaction of suggestibility, anxiety, attentional focus, and coercion. Given the powerful impact of a confession as evidence, any increased potentiality for false statements poses a risk for miscarriage of justice.

Studies in many contexts have demonstrated that when learning occurs in a chemically altered state, it may not be possible to access that material unless the person is again under the influence of the drug. Methamphetamine has been used in studies of such state-dependent learning. In common with other chemicals, methamphetamine will produce state-dependent retrieval (SDR). However, careful evaluation of studies in this area has shown that SDR occurs on a free-recall basis, but tends to disappear with cued or recognition-based recall regardless of the kind of substance involved (Brown, Scheflin, & Hammond, 1998). By extension, if questioning is managed correctly, the presence of methamphetamine in the system of a suspect or a witness may not necessarily damage that person’s capacity to accurately describe experienced criminal events. In such cases, the use of cued and recognition tasks, as well as other safeguards as discussed above, should be built into the interrogation strategies.

Methamphetamine Abuse and Competency to Proceed

Reviews of the forensic literature on competency to proceed are found in Blau (1984); Curran, McGarry, and Shah (1986); Ewing (1985); Gutheil and Appelbaum (1982); Melton, Petrila, Poythress, and Slobogin (1987); Shapiro (1984); Weiner and Hess (1987); and Ziskin and Faust (1988, 1995). Works devoted exclusively to competency to stand trial include those of Grisso (1986, 1988); McGarry (1973); and Roesch and Golding (1980). Although none of these sources deal primarily with methamphetamine abuse, their contents address means to behaviorally assess and evaluate competency to stand trial.

The legal requirement of competency to stand trial is an extension of the general rule that no one should be tried for a crime in his or her absence. If a defendant must be physically present to defend against criminal charges, that defendant must also be "mentally present." Disorders which interfere with the psychological participation of a defendant at trial may render that defendant incompetent to stand trial and require that the proceedings be postponed until effective participation can be assured. Symptoms of methamphetamine may compromise the defendant's competency to stand trial. As discussed above, chronic methamphetamine abuse may cause severe confusion, apathy, short-term memory problems, executive dysfunction, auditory hallucinations, and other significant problems that may persist for a considerable length of time after abstinence commences.

Several competency questionnaires are available for use in evaluating trial competencies: The Competency Assessment Instrument (Grisso, 1986, 1988), the Interdisciplinary Fitness Interview (Golding, Roesch, & Schreiber, 1984), and the Competency Screening Test (McGarry, 1973). The forensic evaluator should utilize these methods within a broadband assessment approach which also evaluates psychopathology, skills, and response styles.

Most jurisdictions use a variation of the rule to define competency to stand trial outlined by the U.S. Supreme Court in *Dusky v. United States* (1960). *Dusky* requires that a defendant have the ability to (a) understand rationally and factually the legal proceedings; and (b) cooperate with one's attorney in one's defense. A methamphetamine-induced disorder which interferes with either of these capabilities is sufficient to render the defendant incompetent to stand trial. However, incompetency to stand trial is not to be equated with the mere presence of mental illness (*Feguer v. United States*, 1962; *United States v. Adams*, 1969), or amnesia (*United States v. Wilson*, 1966), or of a need for treatment. The claimed disorder must be of the kind and severity which impairs the functional capacities outlined in *Dusky*.

Usually, the question of competency to stand trial is raised by the defense attorney, who has the most frequent contact with the defendant and who has the professional and legal obligation to raise the question in appropriate cases. However, case law suggests that the question *must* be raised, even by the prosecution or the court itself, whenever a "bona fide doubt" exists regarding the defendant's capacity to mount a defense (*see Drope v. Missouri*, 1975; *Pate v. Robinson,* 1966). The question of a defendant's competency to proceed may be raised at any time from the defendant's first appearance in court to the time of sentencing.

In actual practice, the majority of mentally disturbed defendants are easily identified by participants in the criminal process. Actively psychotic, demented, and

severely mentally retarded persons are usually recognized by arresting officers, jail personnel, and/or defense attorneys and may be transferred to treatment facilities prior to any court appearances. Clinically, the chronic methamphetamine abuser is the defendant who has lost weight; looks malnourished, disheveled, and unhealthy; is reticent or loose in verbal responses; appears aphasic or has word-finding problems; is generally confused; shows impulsiveness with a low frustration tolerance. Often, the individual exhibits a blank stare. They are often unable to answer simple questions that require orientation (to person, place, date, and circumstances of the evaluation), attention, and memory.

In *State v. Melvin Hashimoto* (1989), the 30-year-old defendant was charged with holding captive and robbing several people in Mililani. He had smoked ice for five-and-a-half years before as well as during the instant offenses. In his HRS § 707-404 sanity report, the senior author stated:

> The Defendant is presently unfit to proceed. [The Defendant was expressionless and not oriented to date, claiming that it was two months earlier.] He claims no recall of his attorney and has no stated idea of possible legal consequences if convicted of the charges. He stated that he is facing the charge of "running away" and [talked about seeing the devil laughing at him in the rear view mirror of the car as he approached the scene of the alleged crime]. He could not recall the function of the judge and the defense attorney, but stated the prosecutor was on his side. He claims no knowledge of the legal process, stating that he has never been to court previously. [Oahu Community Correctional Center] medical records revealed that he is partially stabilized on antidepressant and antipsychotic medication. These same records suggest (a) the reporting of visual and auditory hallucinations, noncommand in quality; (b) anhedonia and depression; (c) distractibility; (d) blank spells; and (e) other psychological symptoms.

The defendant was re-examined one year later. He showed a substantial improvement in the criteria for competency and was found to be fit to proceed.

Defendants who are heavy methamphetamine users and/or who decompensate while awaiting trial often require professional treatment before criminal proceedings can occur. From a fitness perspective, if a person is disorganized and psychotic, it does not matter if the psychosis is secondary to voluntary substance abuse or to some other condition. If the *Dusky* criteria are violated (or if relevant state cases suggest other competency criteria which are violated), the expert should report that the defendant is incompetent to stand trial.

Defense attorneys sometimes raise questions of competency to stand trial for their apparently competent clients as a "fishing expedition" in order to secure a court-

ordered professional evaluation of their clients which would otherwise be unavailable. These evaluations usually produce data from the expert relevant to an insanity plea, to the question of mitigation, and/or to dangerousness factors which may be considered at the time of sentencing. Yet, the vast majority of defendants evaluated for competency to stand trial are found to be competent. This reflects the very basic cognitive and behavioral skills required in *Dusky*. In addition, assuming that the clinical data obtained is valid and reliable, the "fishing expedition" may actually save the court time and money in the event that these other issues are raised by the defendant or are abandoned as trial strategies. Findings from a competency evaluation may also serve as a basis for a plea bargain as in the aforementioned *State v. Hashimoto* case.

In summary, the question of competency to stand trial in methamphetamine cases involves three separate questions: (1) Does the defendant exhibit methamphetamine symptoms sufficiently severe to justify a finding of incompetency (diagnosis); (2) Is the defendant unable (a) to understand rationally and factually the legal proceedings, or (b) to assist counsel in defense (incapacity); and (3) Is this incapacity caused by the mental disorder (causation). The answers to these three questions lead to several possible scenarios:

1. Methamphetamine alone or in combination with another mental disorder causes a defendant to be incapacitated;

2. The defendant may have a genuine condition which causes an insufficient incapacity to stand trial (e.g., circumscribed delusions about the "facts" of the alleged crime, but an impairment in trial capacity);

3. The defendant may have a genuine mental disorder and his or her impaired capacity to stand trial is due to fabrication or exaggeration (e.g., malingering in the context of a genuine disorder); or

4. The defendants may have a genuine mental disorder and is incapable of standing trial, but the mental disorder is not severe enough to justify a finding of incompetency (e.g., a depressed defendant whose guilt over killing his wife leads to disinterest or lack of cooperation in putting on a defense).

In some jurisdictions, a finding of incompetency to stand trial is not restorable and can lead to continuing criminal court jurisdiction in the same way that not a "guilty by reason of insanity" finding allows (*see* Ohio, Senate Bill 285, effective July 1, 1997). In Hawaii, competency to stand trial (i.e., fitness) is covered in HRS § 704-406. Fitness is not defined.

The Hawaii Intermediate Court of Appeals attempted to define, if not operationalize, competency to stand trial in *State v. Silverio Soares* (1996). A three-fold test requires that the trial court determine whether or not the defendant (1) has

sufficient mental ability to consult with his or her defense counsel with a reasonable degree of rational understanding, (2) has the capacity to assist in preparing a defense, and (3) has a rational, as well as factual, understanding of the proceedings against him or her.

Application of the above test appears to go beyond *Dusky v. United States*, (1960), *Drope v. Missouri* (1975), and other cases pertinent to competency to proceed. Moreover, the test appears ripe for application of the empirical findings on methamphetamine as those findings apply to cases where the defendant abused methamphetamine, even a substantial period before the instant offense occurred.

The test requires a functional abilities to develop a working relationship with one's defense counsel, provide information that can be used to present a coherent defense, and make fundamental defense decisions. These abilities rest on attentional, recall, executive, and other cognitive skills which are commonly impaired in methamphetamine abusers. The paranoia which results from methamphetamine abuse may cause distrust and withholding of information. Recall of the alleged offense may be distorted and fragmentary. Making fundamental defense decisions requires the synthesis of a wide variety of information, as well as judgment and executive abilities to plan, monitor, and re-evaluate legal positions and strategies.

The *Soares* test requires that the defendant have the ability to testify in court, if necessary. Methamphetamine abusers may have significant deficiencies in speech and language processing, as well as in other cognitive dimensions, that could lessen the positive impact of the testimony.

The test also requires that the defendant be able to withstand the pressures of a trial. The foregoing data on brain deterioration in methamphetamine abusers suggest that, even after complete abstinence from the drug, the defendant's ability to withstand the pressures of a trial (as well as other stressors) may suffer. This deterioration, if it in fact does compromise the defendant's ability to adapt, may likely affect broadband cognitive abilities and may necessitate fitness evaluations at various points in the legal process.

Finally, the *Soares* test requires that the evaluation of fitness to proceed be made with specific reference to the nature of the charge, the complexity of the case, and the gravity of the decisions with which the defendant is faced. Translated into the thinking

of forensic mental health experts, this means that no longer can general fitness criteria or standards be applied to specific cases without taking the unique circumstances, strengths, and limitations of the defendant into consideration. This position is reasonably close to the notion that the gravity of the decisions with which the defendant is faced, to take as one example of required skills, be appraised by the evaluator from the viewpoint of the defendant as he or she perceived them to be. Thus, both norm-based and individual (i.e., idiosyncratic) measures may have to be utilized in future evaluations of competency to stand trial where methamphetamine is involved.

The *Soares* test, at least in methamphetamine cases, appears to necessitate a thorough forensic neuropsychological or neuropsychiatric evaluation with built-in measures to detect possible malingering and deception. Forensic evaluations of competency to stand trial, rather than reflecting easily measured traits/states of the defendant, should, in methamphetamine cases, at least approximate the "penetrating and comprehensive examination" of the defendant as required by *State v. Kane* (1971).

Pathological Intoxication and Criminal Responsibility

The Hawaii Revised Statutes define pathological intoxication as "intoxication *grossly excessive* in degree, given the amount of the intoxicant, to which the defendant *does not know* the defendant is susceptible and which results from a *physical* abnormality of the defendant." HRS § 702-230(5)(c) (emphasis added).

Despite frequent attempts by defendants to present voluntary intoxication as pathological intoxication, and therefore as an exculpating factor, the courts have consistently maintained that voluntary intoxication is not admissible to negate state of mind to establish an element of the offense. *See State v. Souza* (1991); *State v. Hall* (1983); *State v. Freitas* (1980); *State v. Nuetzel* (1980).

In *State v. Souza* (1991), the defendant admittedly smoked methamphetamine just before he stabbed the victim in the back with a knife. Souza then repeatedly stabbed the victim as the latter attempted to escape, and then pursued the victim in a car, grazing his leg as the victim jumped into the bushes. Souza was subsequently arrested, charged, and convicted of Attempted Murder in the Second Degree and Unauthorized Control of Propelled Vehicle. On appeal, the Hawaii Supreme Court held that voluntary intoxication was not admissible and that it was a gratuitous defense that is not constitutionally protected as a defense to criminal conduct.

Psychological and psychiatric experts have not been deterred by the courts' ostensibly clear rulings. In *State v. Romel* (1990), the facts were straightforward. *See Tradewind Insurance Co., Ltd. v. Stout* (1997). On June 30, 1988, 18-year-old Romel

shot his summer school teacher while she was teaching English at Aiea High School. At trial, Romel testified that he had been smoking crystal methamphetamine since his junior year and had smoked "ice" every day of summer school up to the time of the shooting. Prior to the shooting, he smoked ice before going to school with his gun. He further testified that the ice made him feel paranoid, and that he believed that the victim-teacher had been picking on him.

A psychiatrist based in Honolulu testified that ice smokers develop a paranoid psychosis similar to the symptoms of paranoid schizophrenia. In a further restatement of general findings from the literature, she observed that large quantities of ice make a person "very paranoid and delusional." Based on her interview of Romel, she concluded that he had experienced a "severe paranoid hallucinatory or persecutory state," had gotten to the point of "absolute desperation" and "felt he had no recourse but to try to kill [the victim], kill the object of his pain." Unsupported by any statistics or baserate information, she speculated that it "was 99.9 percent that he was not able to choose to stop" taking methamphetamine. She then concluded that the defendant would not have shot the victim had he not been methamphetamine intoxicated.

A clinical psychologist testified that, based on his interview of the defendant and his mother, Romel showed behavior consistent with ice abuse. Based on his interview and police reports, he conjectured that Romel had a minimal history of acting out. He then opined that the chances of the shooting occurring "without some kind of drug involvement would have been negligible, minimal." He then added that ice "was a major, major contributing factor, if not the causal one of what [Romel] did."

The State's expert agreed with the expert psychiatrist's conclusion that, at the time of the shooting, Romel was paranoid and deluded. He then opined that Romel's state of mind "was a classic picture of focused delusion," meaning the false belief directed at a particular set of circumstances. A particular person "is the one responsible for everything and right or wrong[,] everything kind of comes down on that one person." This expert also failed to incorporate the defendant's probable history of violence, especially under methamphetamine. Had such an evaluation been performed, the "focused delusion" may have been found to be directed at parties who placed expectations for performance on the defendant.

The jury in the *Romel* case decided beyond a reasonable doubt that the defendant intended to shoot his teacher. Romel was convicted of Attempted Murder in the Second Degree, which meant that, despite the proffered conclusions of the experts on the accused's drug use, the jury believed he had formed the specific intent to kill his teacher.

In the more recent case of *State v. Holbron* (1995), unlike those in the *Romel* case, experts offered diagnoses of multiple mental conditions to explain methamphetamine-related violence. In *Holbron*, on April 21, 1990, the defendant, in what appeared to be heinous conduct, threw a plate of food brought to him by his girlfriend at her head, then threw a radio at her. Holbron then asked her, "You ready to fucking die?" then poured gasoline on her and attempted to set her afire with a match. The attempt failed, but a second match ignited the gasoline and the victim suffered severe burns trying to extinguish the flames. The defendant ran out of the house and down the street. The house was destroyed by fire.

Holbron did not dispute the facts, but instead offered the defense that he had "potentially suffered a lot of trauma to the head, . . . and that he has recognized organic difficulties in the way his brain works and the way he functions in a day-to-day situation." One of the defense experts testified that Holbron's right frontal lobe was damaged, which created difficulties in impulse control. A second defense expert diagnosed Holbron's condition as Organic Mental Disorder NOS and an Antisocial Personality Disorder. An third expert diagnosed substance induced Organic Mental Disorder and Methamphetamine Use.

The defense theory, as argued to the jury on the basis of cerebral damage, was that Holbron's bizarre actions clearly indicated that he did not have the requisite state of mind to commit attempted murder. Obviously referring to the amotivational effects of methamphetamine and brain damage, among other factors, his defense attorney then maintained that Holbron was not sufficiently "aroused" by the events of the alleged crimes to the point where he would have formed the specific intent to cause the victim's death. The defense attorney argued that ". . . if anything, [Holbron] acted recklessly." The trial ended with the return of the jury's guilty verdict after 29 minutes of deliberation.

Pathological intoxication has been successfully used as a defense if, by reason of such intoxication at the time of the alleged offense, the defendant lacked substantial capacity either to appreciate its wrongfulness or to conform his or her conduct to the requirements of the law (HRS § 702-230(4) and (5)). In other words, pathological intoxication can assume the status of a mental condition and hence may allow exculpation if a link to a cognitive or volitional impairment can be demonstrated.

Such was the case in *State v. Kuhia* (1992), a landmark case in several respects. Here, the defendant was acquitted by virtue of the affirmative defense of pathological intoxication by methamphetamine, a first in Hawaii, which the defense proved by a preponderance of the evidence. Two important facts were determinative: (1) the defendant was not substance intoxicated at the time he killed the victim; and (2) multiple diagnoses were offered, at least one of which had exculpating potential. In *Kuhia*, mental health experts, as well as other corroborating evidence suggested that the

defendant suffered from paranoid schizophrenia and an organic delusional disorder, in addition to methamphetamine abuse. The Organic Delusional Disorder was seen as caused by chronic methamphetamine use, impairing his ability to conform his conduct to the requirements of the law.

Kuhia raises the troubling question of the necessity of intoxication at the time of the alleged killing in order to establish pathological intoxication, a clear implication of HRS § 702-230). This outcome appears to contradict the general principle limiting the availability of pathological intoxication as a defense in that it permits a defendant to avail himself or herself of a mental condition at the time of the alleged offense that is linked to a history of voluntary self-induced intoxication. Note that in all pre-1998 methamphetamine cases presented in this article in which the pathological intoxication defense was unsuccessfully offered, the defendant *was* methamphetamine intoxicated at the time. Under *Kuhia*, pathological intoxication could be presented as a defense for a defendant who had not ingested methamphetamine for a considerable period of time, perhaps months or years, before the alleged crime.

In *State v. Garringer* (1996), the defendant was convicted of Robbery. During trial, Garringer admitted that he and a younger accomplice had planned to rob a Jack-in-the-Box. The minor threatened a worker, pounded the shotgun on the counter, where it discharged, and killed the worker. Garringer then grabbed the money from the cash register and the two males fled in a car stolen by Garringer prior to the robbery. The defendant testified at trial that he had smoked methamphetamine almost every day for about two years, and that he and the minor had smoked methamphetamine before the robbery and planned to rob the Jack-in-the-Box after running out of drugs. Garringer testified that "despite feeling the symptoms of withdrawal during the incident in question, he *had control over what he was doing*." He never blamed methamphetamine for the robbery. Garringer was convicted of Robbery in the First Degree and of firearms related charges.

Garringer later filed an action for postconviction relief. One of the grounds for the requested relief was ineffective assistance of his trial counsel, who had failed to raise the issue of the defendant's temporary insanity due to the effects of drug usage and had failed to obtain psychiatric evaluations of the defendant prior to trial. The Hawaii Supreme Court held in part that Garringer should have been allowed to clarify his petition by amending it to include factual allegations showing that (1) his appellate counsel omitted an appealable issue, and (2) in light of the entire record, the status of the law, and the space and time limitations inherent in the appellate process, a reasonably competent attorney would not have omitted that issue. The Court noted that, despite the fact that the defendant's acquittal in *Kuhia* was based on the affirmative defense of pathological intoxication, Garringer was required to "overcome significant hurdles in order to establish that such a defense was potentially meritorious and that a reasonably competent attorney would not have omitted that issue."[4] On remand for a

4 Among these hurdles were Garringer's trial testimony that, despite his use of crystal methamphetamine, he had control over what he was doing, and that he was voluntarily intoxicated at the time of the crime.

hearing to determine the merits of Garringer's ineffective assistance of counsel claim, the Circuit Court found against him. Garringer has appealed this ruling.

Other cases are of interest in untangling the issues surrounding pathological intoxication. In recent years, the methodology of the sanity examiner has been scrutinized in cases of criminal responsibility in which the role of methamphetamine was minimized, ignored, or misconstrued by the expert. In methamphetamine cases, no longer can it be assumed that a consensus of the three-panel § 704-404 examiners to the effect that the defendant is mentally incapacitated automatically leads to an acquittal on grounds of physical or mental disease, disorder, or defect.

The key case in Hawaii is *State v. Monte Louis Young (1998).* In that case, on May 10, 1997, shortly before 7 a.m. at the Burger King on University Avenue in Honolulu, Young pulled a hammer from behind his back and began striking the victim, Paul Ulbrich, on the back of the head. The victim's screams could be heard for some distance. After each blow, Young examined his handiwork as if to survey the damage. After the third blow, Young raised the hammer toward a Burger King worker and said "Get in[side] before I kill you too." Young leapt over a wall, dropped the hammer in the parking lot, and left in his pickup truck.

According to witnesses and the experts, Young had been acting strangely before the killing, and had heavily abused alcohol and marijuana in the weeks before the instant homicide. He had a history of violent acting out within a strong polysubstance abuse pattern extending back at least a decade. His previous abuse of methamphetamine, apparently his drug of choice when available, was extensive. In 1993, Young's father had reported a 10-year history of methamphetamine use by Young. He last became intoxicated on methamphetamine approximately two months before the instant homicide.

CT scanning revealed a small subarachnoid hemorrhage and a cerebral contusion in Young's right parietal area. Based on his strange behavior, evidence of brain damage, and other factors, each of the examiners rendered a diagnosis of Psychotic Disorder NOS, among other diagnoses, and all but one examiner linked that disorder to a substantial impairment in both cognition and volition. The State retained the senior author to comment on the methodology of the sanity examiners pursuant to HRS § 704-410. The State also retained the services of a clinical-forensic psychiatrist who had examined Young for the defense five years earlier in California.

In its Findings of Fact and Conclusions of Law, the Court ruled that Young was guilty of Murder in the Second Degree. The Court correctly noted that (1) a condition excluding responsibility is an affirmative defense that must be shown by a preponderance of the evidence; (2) the lack of substantial capacity means "capacity which has been impaired to such a degree that only an extremely limited amount remains"; (3) if Young had "no impairment, or if the impairment was not substantial, a fair-minded [trier of fact] would find the defendant sane beyond a reasonable doubt"; and (4) that Young had "failed to prove by a preponderance of the evidence, that he lacked the substantial capacity either to appreciate the wrongfulness of his conduct or to conform his conduct to the requirements of law." The Court also concluded that self-induced intoxication, which is intoxication caused by substances which the defendant knowingly introduces into his body, is prohibited as a defense to any offense, does not constitute a physical or mental disease, disorder, or defect within the meaning of § 704-400, and therefore cannot be considered an exculpatory condition that is the product of circumstances that was beyond Young's control.

In applying this reasoning, the Court held that the State had proved, beyond a reasonable doubt, that Young knowingly and voluntarily ingested drugs and alcohol both over a prolonged period of time and in the weeks immediately preceding the homicide. The Court viewed these two time periods of voluntary substance abuse as having caused Young's several "physical or mental diseases, disorders or defects."

There are remarkable similarities between *Young* and *Kuhia*, including prior substance abuse which most likely contributed to other diagnosed mental conditions but no methamphetamine intoxication at the time of the alleged offense. It is speculated that *Young* will nullify the impact of *Kuhia* to a substantial degree.

The above cases lead to the conclusion that the expert's decision path as well as *Daubert* considerations should be scrutinized closely. The American Law Institute (ALI) test of criminal responsibility leads to a three-part test of insanity: (1) a genuine, sufficiently severe mental disorder; (2) a substantial impairment in the accused's capacity to appreciate the wrongfulness of his acts and/or in his ability to conform his conduct to the requirements of the law; and (3) a link between the two. A heuristic model based on this three-part test for criminal responsibility evaluations was presented by the senior author (1985, 1987) and has direct relevance to methamphetamine cases. This model involves the retrospective analysis of:

1. the forensic database;

2. the type of distortion and/or deception shown by the defendant;

3. the defendant's reconstruction of the instant offense;

4. long-term (i.e., historical) versus instant crime behavior;

5. the defendant's mental disorder in terms of whether it is sufficiently severe and causally connected to the instant offense;

6. self-determination and choice of crime-related behaviors; and

7. conclusions regarding criminal responsibility.

The first recommended step involves the creation of a reliable and valid database, multisourced and interdisciplinary in nature, that forms the basis for all opinions regarding criminal responsibility. The contents of the database are obtained by examining the perpetrator, victim, context of the crime, and other data relevant to the accused's current and past circumstances.

The most important part of the forensic analysis concerning methamphetamine abuse may be the database upon which the eventual conclusions are based. Criteria for including data in the database are that they are multisourced and interdisciplinary and are based on information drawn from sources other than the client. It is especially important to gather data from sources that the defendant wishes to conceal because of the likelihood of finding unfavorable information concerning methamphetamine abuse (e.g., juvenile records; so-called "expunged" records which may be available in unmodified form at government archive centers; interviews with peers, ex-spouses, and mates; military performance reports; and information from other states or countries). It is helpful for the credibility of the expert to base the forensic evaluation on as many database sources as possible.

The notion of a complete database is critical in evaluating criminal responsibility in situations involving methamphetamine. At this juncture in time, the perception of the Court, rather than reality, is the important factor. In *Kuhia*, the Court appeared satisfied that the mental health experts had an adequate database which then provided the foundation for later acquittal. In *Garringer*, the defendant asserted in his petition for post-conviction relief that he should have been psychiatrically evaluated, thus, in essence, claiming that the Court had an incomplete database.

In *Young*, all of the defense experts admitted that their proffered findings could be wrong if the database upon which each expert had relied was flawed or incomplete. The State then demonstrated through its own experts and through cross-examination that the sanity examiners' database lacked essential information. For example, the three-panel examiners failed to take into account or even properly review existing neuropsychological tests from a defense neuropsychological consultant to the effect that Young had average or better cognitive functioning. Thus, a link between

a mental condition based on brain damage and a substantial impairment, even if cerebral injury was established, could not be made.

The next step in the decision process concerning criminal responsibility consists of ruling out or accounting for nondeliberate distortion within: (a) the evaluator; (b) the reporting person; and (c) the reported event. Nondeliberate distortion due to anxiety, fatigue, or other factors may largely explain both evaluation and crime behavior and is, therefore, considered first.

Nondeliberate distortion for the methamphetamine user at the time of the instant offense may consist of several simultaneously operating factors. Time perception is speeded up, resulting in unreliable estimates of time. Short-term memory problems, including encoding and retrieval difficulties, may be experienced. Other deficiencies in the perpetrator, victim, and witnesses need to be explored as discussed above.

As the next step in the evaluation process, deliberate distortion, if it exists, should be ruled in by a positive and replicable demonstration of misrepresentation. Deliberate distortion may be shown by the defendant and by cross-validating sources. The evaluation of the defendant's self-reports in methamphetamine cases should be scrutinized for misrepresentation by examining third-party reports and material evidence of the crime. Psychometric testing by objective measures, such as the Minnesota Multiphasic Personality Inventory-2 (MMPI-2), California Personality Inventory (CPI), 16-PF, and the Millon Multiaxial Clinical Inventory-III (MCMI-III) are appropriate for assessing distortion due to the embedded scales that accurately measure deception. An inspection of the crime scene is important as much methamphetamine-related violence occurs within a brief time span at a particular site, and an appreciation of the context is helpful to the evaluator. Data derived from the input of significant or knowledgeable others which indicate bias or a given motivational set (e.g., desire for revenge, to be reunited with the defendant) should be excluded from the data pool or placed into proper perspective by being compared with other known facts.

In the murder and attempted murder cases reviewed above--*Romel, Holbron, Kuhia, Garringer,* and *Young*--the issue of nondeliberate distortion by the defendant was not raised. Considering the significant effects of methamphetamine use on attention, memory, and other cognitive skills, as discussed previously, the accuracy of the defendant's recollection needs to be cross-validated and not merely assumed or left unaided in the province of the jury.

Deliberate distortion--particularly faking bad or malingering in order to feign symptoms and conditions--raised as a significant source of concern in these cases was also not addressed. Yet, the base rate for malingering in state of mind defenses for

felony cases, in general, is conservatively estimated at 20% (Rogers, 1988). There are compelling reasons to suggest that the incidence of malingering may be higher in methamphetamine cases. First, the chances of malingering increase with genuine deficiencies (Hall & Pritchard, 1996), and methamphetamine creates significant cognitive and psychological deficiencies in many abusers. Second, most defendants know or have been instructed by their attorneys, that methamphetamine abuse or intoxication does not constitute an exculpating condition, as in virtually all cases the drug was taken knowingly and voluntarily. Thus, the search is on by the defense team, including the retained experts, for a condition that may be sufficiently severe and beyond the control of the defendant (e.g., a thought disorder such as Paranoid Schizophrenia). Methamphetamine mimics this psychosis in many respects and thus would be a natural target for incorrect (but unintentional) diagnosis by defense experts. The defendant may, however, as seen by the authors in a number of cases, deliberately de-emphasize methamphetamine use and exaggerate or fabricate psychotic features of their behavior.

After distortion and deception are taken into account, as a third step, a defendant's recollection of an alleged crime is usually helpful to know in inferring his or her state of mind. Even when the defendant does not testify or when state law shifts the burden of rebutting insanity to the government after the defendant has raised the possibility of insanity, presenting the defendant's state of mind through experts is critical to the successful application of the insanity defense. Although state of mind can often be inferred from eyewitness accounts, material evidence, reports of third parties regarding events before and after the crime, and the defendant's own description of events, the expert presents the state of mind of the defendant from a professional, independent vantage point using a well-established DSM-IV classification system. Hence, the impact on the Court, especially when unrebutted, can be considerable.

In some methamphetamine cases, the accused may not render spontaneous statements or submit to interrogation shortly after the alleged crime. In such cases, an inspection of the crime scene and interviews of cross-validating sources take on even greater importance. In none of the cases cited above did the mental health experts who examined the defendant visit the scene of the killing. In cases where the accused declines to be evaluated by an expert, that professional must refrain from proffering conclusions relevant to criminal responsibility. The expert may, however, comment on the methodology of the other sanity commissioners, as in *Young*, and present information from the literature on methamphetamine abuse.

The fourth step involves conducting an historical analysis of relevant past behavior and comparing it with that shown during the instant offense. The goal is to determine whether the instant offense is typical or atypical for the defendant. Rare events are most likely triggered by high stress or an unusual combination of

environmental or internal events in the absence of history. Common events suggest a habitual pattern and are considered more inculpatory. In methamphetamine cases, repetitive violence associated with abuse of this substance is considered inculpatory because it implies recurring choice to aggress upon others.

A key question is whether basal violence associated with methamphetamine, especially when it is similar to the instant offense, was the result of a habitual set of violent acts or an isolated event. Historical instances of violence should be examined in terms of variables such as frequency, severity, recency, acceleration, triggering stimuli, opportunity factors, and inhibitions to aggression.

Historical factors that have traditionally indicated willfulness to commit violence in methamphetamine cases include:

1. lengthy time delays between triggers to violence and the instant crime;

2. performance of complex chains of behaviors in order to execute the violent behavior;

3. flexibility of response (e.g., when the perpetrator has multiple weapons with which to inflict harm); and

4. predatory versus reactive violence.

Key forensic questions can be formulated as follows:

1. Should the defendant have known the likely outcome of the chain of behavioral events culminating in violence?

2. Did the defendant know that methamphetamine intoxication in this situation, based on the defendant's history, would likely result in his or her violence to another?

Consider the following two courtroom scenarios:

Prosecutor: Doctor, you testified that the accused suffered a substantial impairment in mental capacity at the time of the alleged offense. You cited a list of neuropsychological and psychological deficits in terms of his ability to self-control and self-monitor his behavior as reasons for the substantial incapacity, including a history of methamphetamine abuse. You did not examine previous violence, focusing instead on behavior during your evaluation and at the time of the alleged crime.

Would your conclusion change if you knew the accused engaged in several dozen other very similar acts of previous violence while methamphetamine intoxicated, with rewarding consequences, high-stated self-control, some evidence of planning and rehearsal, and minimal loss of verbal or physical abilities during those violent acts? Why or why not? Cannot one's past violence influence and affect appreciation of wrongdoing and self-control in later violence?

Let's turn this around for the defense, assuming expert testimony to the effect that there was no substantial impairment for a male defendant who admitted to attacking the victim:

Defense: Doctor, would you change your mind if you knew that the defendant (a) had no previous violence at all prior to the instant case and, in fact, worked productively and nonviolently in his job at the plantation for 15 years; (b) had an extremely high cumulative stress level for the year before the violence, as measured by several standardized tests and independently by DSM-IV criteria; (c) was borderline retarded with poor coping skills at best; and (d) believed that he had to perpetrate the violence because his life had been placed in danger by the victim? The other examiners considered these facts, why didn't you?

In short, there is no escape from considering historical influences to criminal behavior. This is because mental capacity to a greater or lesser degree is always influenced by previous experiences. Studies have suggested that historical violence accounts for the major portion of the statistical variance in accounting for exhibited violence (Hall, 1997; Hall, Catlin, Boissevain, & Westgate, 1984). A history of violence or, conversely, a benign past, appears to act as a prepotent force of its own, determining to a large extent whether violence will, or will not, occur. In addition to history, triggers to violence and opportunity factors account for a high incidence of exhibited violence (Hall et al., 1984b). This holds true whether or not there is a history of methamphetamine abuse.

Historical influences are discussed throughout the cases cited above. In *Romel*, the examiners noted that the defendant had a history of methamphetamine abuse, but one examiner, who proffered the ultimately unsuccessful opinion that the defendant was mentally incapacitated, failed to uncover a collateral history of violence even though the defendant was methamphetamine intoxicated at the time of the instant homicide. In *Holbron*, the defense attorney unsuccessfully argued that his client had a history of antisocial behavior (which is usually seen as inculpatory), reflected in several mental conditions, which then caused the defendant to be less aroused by the events of the

alleged crime (and therefore presumably less responsible). In *Young*, the Court noted as instrumental to its conclusions, that the defendant had no family history of mental health problems but had a strong individual history of (1) polysubstance abuse and, in particular, methamphetamine abuse; (2) Antisocial Personality Disorder, with long-term behaviors associated with this condition; and (3) violence toward others.

As a fifth step, a diagnosis of the defendant's mental state at the time of the crime usually requires evidence in support of a DSM-IV mental condition. This is the first prong of the traditional three-part test of insanity (i.e., establishing a mental condition). For all practical purposes, sanity examiners, at least in this jurisdiction, offer dual or multiple diagnoses to the court. A diagnosis, such as Methamphetamine Intoxication or Abuse, is rarely offered alone because the examiner who wishes to find lack of criminal responsibility knows that voluntary substance abuse is not effective in achieving a favorable outcome, or because a single diagnosis does not reflect the clinical reality of the case. In *Kuhia*, the eventual acquittal of the defendant was tied to multiple diagnoses, any one of which could have been exculpatory in nature.

Defense attorneys should note that a very high percentage of methamphetamine abusers also have Attention Deficit Hyperactivity Disorder (ADHD; Eme, 1998, personal communication). The forensic evaluator must determine whether ADHD should be diagnosed in the instant case and factor these observations into his or her conclusions regarding criminal responsibility.

Any psychiatric condition, alone *or in combination* with existing conditions (i.e., creating *interactive* effects), provides the basis for lack of criminal responsibility. The situation is even more vague when the accused was not methamphetamine intoxicated at the time of the alleged offense but had chronically used methamphetamine sometime in the past. Courts need to know, as in *Young*, that methamphetamine psychosis or methamphetamine-related violence persist for months after abstinence and can be triggered by substances other than methamphetamine to include alcohol, marijuana, cocaine, opiates, and even caffeine. The literature on cross-reversal tolerance (i.e., sensitivity) needs to be shared with the trier of fact.

A proffered diagnosis requires evidence that the condition existed at the time of the crime, regardless of whether or not it also existed prior to or after the crime. Evidence of a chronic mental disorder (e.g., schizophrenia, mental retardation, or cognitive disorder) in existence *before* the instant offense increases the likelihood that the disorder also existed at the time of the crime, but is not sufficient by itself. Some chronic mental disorders can be in some level of remission or can be controlled with psychotropic medications. Evidence of a mental disorder (e.g., depression, anxiety

disorder) which arose *after* the instant crime is irrelevant to a diagnosis at the time of the offense.

The existence of a mental disorder at the time of the instant offense may or may not shed any light on the (legal) blameworthiness of the defendant. The severity of the disorder and its impairment of critical faculties at the time of the offense mediate its exculpatory effect. As a sixth step, the analysis of self-control and choice by the accused is central to the determination of criminal responsibility. Intact self-control and choice for the time of the alleged crime, which can exist along with delusional or hallucinatory behavior, often lead to a finding of criminal responsibility. Conversely, impaired self-control frequently results in exculpation or mitigation of responsibility for the instant offense. In sum, the evaluator should analyze the instant offense for the defendant's abilities and deficits in areas relevant to behavioral self-regulation. An exclusive focus on limitations, pathology, and deficiencies is a fundamental mistake.

Whether or not methamphetamine use is an issue, parameters to be considered during the alleged commission of the crime by the defendant include:

1. coherence and other characteristics of speech suggesting intact verbal expression;

2. intensity and appropriateness of affect, especially during portions of the crime sequence that would normally produce strong emotion;

3. the focus of the crime, ranging from nebulous to markedly specific;

4. level of substance intoxication during or shortly before the alleged offense;

5. current, long-range mental conditions such as retardation or focal brain damage;

6. behaviors requiring immediate, short-term, and historical memory skills of discrete sensory modalities or a combination of modalities;

7. gross-motor, fine-motor, perceptual-motor, and motor-sequencing skills;

8. presence of bizarre behavior;

9. level of anxiety and stress reactions;

10. presence of delusions and/or hallucinations;

11. presence of depressed or expansive mood;

12. planning and preparation;

13. cognitive awareness of criminality;

14. level of physical activity; and

15. self-reported control.

The defendant's activities during the week (or longer) before the instant offense should be examined for behavioral deterioration, especially in self-care, work productivity, and in the central love relationship. For many of these parameters, quantitative measures on an empirically validated, Likert-scale format can be obtained from the Rogers Criminal Responsibility Scale (Rogers, 1984) and the Schedule of Affective Disorders and Schizophrenia (Spitzer & Endicott, 1978).

Other considerations include the use of a weapon designed for attack, such as a gun, knife, or numchuka, or a tool that could easily inflict harm (e.g., hammer, screwdriver). The presence of any such weapon during an offense would indicate a chain of responses more subject to control (i.e., selecting, obtaining, concealing, carrying, reaching for, and attacking with the weapon). Chains of responses usually call for shifts in behavior programs and lessen the likelihood of impulsivity. The next level of complexity involves use of a weapon that could be used for attack that the perpetrator found at the scene of the crime. A defendant's use of his or her body to club, strangle, or kick a victim suggests a primitive response. An attack with certain parts of the body, such as biting or banging one's head against the victim, suggests an even more primitive level of aggression. Continuing to attack nonvictim entities (e.g., banging the walls) suggests further loss of behavioral self-control.

The accused's flexibility of response and method of attack should also be considered. The use of multiple weapons, or shifting back and forth from one method of attack to another suggests that different executive functions were utilized. This suggests the presence of self-control, even in methamphetamine intoxicated persons.

As an illustration, in *Young*, indicia of self-control and choice were testified to by witnesses and investigators. These included, but were not limited to (1) the lack of erratic or dangerous behavior while in police custody for abuse of a household member two days before the homicide and at other times, in contrast to his claim that he was out of control for weeks prior to the killing; (2) just prior to the hammer attack on the victim, showing the ability to drive a truck, asking a third party for the time and attempting to panhandle some money from him, pulling a hammer from a position of concealment and striking the victim with it, and monitoring the effect of his blows. The damning

observation from a self-control perspective was a witness's testimony that "after each blow, the defendant would look at Paul's injuries, as if to survey the damage"; and (3) after the fatal attack, showing the ability to threaten but not follow through on another attack on a worker, leaping a wall and running to the truck, driving away, and exhibiting clear and non-erratic cognition and behavior a day after the killing when he was arrested for stealing a boat from Kaneohe Bay.

Defense attorneys should again note the strong association of substance abuse with ADHD. Recognition of this comorbidity is essential to proper diagnosis and treatment. ADHD is a serious impairment of self-regulation. Because the medical form of methamphetamine--Desoxyn--is effective for the treatment of ADHD, it may be possible that a significant percentage of methamphetamine abusers are self-medicating their ADHD. An individual analysis of self-regulation may reveal whether or not the methamphetamine abuse impairs choice and self-control.

The last step of the heuristic model for criminal responsibility (Hall, 1985, 1987) comprises the functional components of the American Law Institute's three-part test which calls for a connection in the nature of cause and effect between diagnosis and impairment. The evaluator must now compare crime-specific behaviors with the retrospective mental conditions proffered by the experts. A link must be demonstrated between the deficiencies of the defendant (i.e., mental condition) and the criminal behavior (i.e., substantial impairment).

If substantial impairment is found in either cognition or volition, that impairment must result from the proffered mental conditions. All jurisdictions require that there be a demonstrated link between substantial impairments and the accused diagnosed condition(s). Further, the cause must be direct, and not secondary. In most, but not all cases, self-induced alcohol and/or drug intoxication at the time of the crime may have contributed to the offense but is considered an invalid argument for escaping criminal responsibility. This further decreases the range of behaviors that can be used as the basis for exculpation. The symptom pool is restricted even more by the exclusion of all disorders that were operating at the time of the crime but had little to do with mental capacity interference.

Brain damage, by itself, for example, does not automatically lead to violence. Hall and Sbordone (1993), in an exhaustive review of the literature on brain injury in humans, found that no lesion in any neurological site or system automatically leads to violence. Even with epilepsy, the aggression that has been observed is primitive and defensive in nature, with no intention of inflicting harm on others demonstrated in empirical investigations.

Mitigation to Murder

The Model Penal Code's concept of extreme mental or emotional disturbance, commonly referred to as "extreme emotion," is currently recognized in Hawaii, New York, and Oregon. Under these schema, the accused can use extreme emotion as a mitigating factor to reduce a murder charge to manslaughter. Hawaii Revised Statutes § 707-702(2) states the following:

> In a prosecution for murder in the first and second degrees it is a defense, which reduces the offense to manslaughter, that the defendant was, at the time he caused the death of the other person, under the influence of extreme mental or emotional disturbance for which there is a reasonable explanation. The reasonableness of the explanation shall be determined from the viewpoint of a person in the defendant's situation under the circumstances as he believed them to be.

The Hawaii Revised Statutes adopted the definitions of extreme emotion as articulated in *People v. Shelton* (1976):

> [E]xtreme emotional disturbance is the emotional state of an individual, who (a) has no mental disease or defect that rises to the level established by [Haw. Rev. Stat. § 704-400 (1985)]; and (b) is exposed to an extremely unusual and overwhelming stress; and (c) has an extreme emotional reaction to it, as a result of which there is a loss of self-control and reason is overborne by intense feelings, such as passion, anger, distress, guilt, excessive agitation or other similar emotions.

Extreme emotion breaks down into a three-part test as follows and as illustrated below: (1) external stresses impact on the individual (2) causing cognitive (thinking) and affective (emotional) reactions, which then (3) lead to a loss of self-control. Self-control and inhibition of violence responses emerge as the key issues in extreme emotion cases.

Single or Multiple Stressors ® Cognitive and Affective Changes ® Breakdown in Self-Control

Generally, competent executive behavior is incompatible with loss of self-control due to extreme emotion. "Executive" behavior is a neuropsychological term referring to motor output, self-monitoring, and judgment after sensory and processing functions have been initiated. Skilled executive behavior occurs in a situation where the accused observes and changes his or her behavior simultaneously in response to a fluctuating environment, all in accordance with the goal or desired object of the action sequence. Hypothesis testing is the highest form of effective performance, as when the accused

changes his or her own behavior (e.g., threatens the victim, puts a key in a lock) in order to see the reaction or outcome (e.g., victim acquiescence, the door unlocking) and then changes his own behavior accordingly (e.g., proceeds to assault the victim, proceeds through the door into the bedroom). In essence, this skill taps the defendant's ability to show a concordance between intentions/plans and actions. It is measurable, objective, observable, and incompatible with both extreme emotion and emotional disturbance.

Executive behaviors which tend to rule out extreme mental or emotional disturbance for the time of the instant offense include, but are not limited to, the following:

a. Motor or mental rehearsal of the crime sequence;

b. Demonstration of a variety of violent acts (flexible behavior as with several weapons);

c. Ability to orchestrate a multi-step or multi-task scheme (e.g., long, connected chains of behaviors);

d. Ability to show change in principle (e.g., from raping the victim to killing her to eliminate her as a witness);

e. Ability to delay violent responses;

f. Nonstimulus boundedness (acts independent of environmental influences);

g. Ability to regulate tempo, intensity, and duration of violent behaviors;

h. Ability to avoid nonerratic behavior during violence unless that was the planned effect (e.g., deliberately becoming substance intoxicated prior to the instant offense).

The above considerations apply in methamphetamine-related extreme emotion cases. The self-control analysis can benefit the defense or the prosecution, depending on findings. In *State v. Raquepo* (1988), a methamphetamine intoxicated defendant was charged with Attempted Murder in the Second Degree, Kidnapping in the First Degree, Terroristic Threatening in the First Degree, License to Carry Firearm, and Place to Keep Firearm in an incident in which the defendant shot a rifle at a roommate/friend. Before trial commenced, the State offered the defendant probation on the basis of a loss of self-control and his disorganization at the time of the offenses. The senior

author noted the following deficiencies before, during, and after the offenses:

1. The defendant asked for help prior to the offenses. He called for an ambulance, informed his roommate that he could not wait for the ambulance, that he felt dizzy, and that he wanted to go to the hospital immediately. Amnesia commenced from this temporal point with no later data suggesting that he was faking the loss of memory.

2. The defendant's behaviors were preceded by strange and perseverative behaviors, such as pacing the floor with a rifle and talking to himself, interspersed with frequent apologies to his friend.

3. He shot the rifle in the direction of his friend; this shooting was not in the context of an impaired relationship with the victim.

4. A detailed analysis of his background revealed no history of violence toward the victim or anyone else.

5. The defendant engaged in disorganized behavior prior to the shooting. He saw the ambulance he was waiting for, but failed to signal the ambulance to stop, provided misdirections when riding in the truck to get help, and other behaviors.

6. Delusional thinking, including the thought that he was dying (e.g., he said to his friend, "If you want to save your life, you going to have to save mine because I'm dying, so take me to the hospital"). He wanted to drop off his weapon at the police station prior to proceeding to the hospital. Shooting at his friend may have reflected his fear of abandonment more than an intent to kill.

7. The defendant showed bizarre behaviors after the offenses. He shot at his friend from the hip in front of others, with no suggestion of secondary gain. There was no chance of escaping detection. After he had left the victim's truck with the keys in it, he asked a stranger to help him by giving him the keys to her truck. He also told this stranger that he had been poisoned and for her to hide his rifle, then threw the firearm onto her lawn. He then proceeded to flag down a police car (with a loaded .45 caliber pistol in his belt) and asked for help, stating that someone was trying to kill him. The bizarreness of his behavior was reflected in the police officers' initial belief that he was the *victim* of a crime, not the possible perpetrator. The defendant forgot that he had "speed" in his clothes, which was discovered at the police station.

The reader may rightfully question whether or not *Raquepo* constituted a case of voluntary intoxication. Again, the perception of the Court and the State or defense in pursuing its case strategy is more critical than actual events.

In *State v. Paned* (1997), the defendant, who had killed an acquaintance with a shotgun, claimed self-defense, but was found guilty of Murder in the Second Degree. A history of methamphetamine-related violence was uncovered, including threatening his grandmother by shoving a gun in her mouth, assaulting various friends, assaulting his wife and striking her with a gun because he suspected her of infidelity, and discharging his shotgun in a reckless manner by shooting at his house. A clear pattern of methamphetamine abuse was shown by bleeding ulcers, paranoia, observations of his behaviors by his family members, and other symptoms. He denied being methamphetamine intoxicated at the time of the killing.

On the night of the murder, the defendant had volunteered to take the victim, a distant relative living at his residence whom he suspected of "fooling around" with his wife, to the airport. His behaviors were replete with indicia of choice and self-control, including driving around with the victim, talking to peers and drinking whiskey with them, and calling his mother and instructing her what to tell others if they should call for him. At the scene--a secluded spot in a residential neighborhood--the defendant was in close proximity to the victim when he fired the shotgun twice, fatally shooting the victim in the chest and the right forearm. The defendant sped off in his car and got rid of the shotgun, which was never found. He then drove to his friends' house and instructed them to remove the 12 gauge shotgun shells from the trunk of his car. He then attempted to borrow another car to establish an alibi and eventually went to a hotel to hide out. Despite an initial claim of amnesia for the crime events and for disposing of the shotgun, he presented information suggestive of recall. In sum, there were multiple indications of self-control for the time before, during, or after the violence. These included alibi behavior, ability to delay and execute the killing, and indicia of planning and preparation.

Dangerousness Prediction in Methamphetamine Cases

Dangerousness prediction breaks down into a three-part process of analyzing history, triggers, and opportunity to aggress that operate against inhibitions to inflict violence. The three main factors associated with violence that are also commonly the targets of deception by suspects (Hall, 1982, 1984, 1987, 1996), including those in methamphetamine cases, are: (1) a history of violence; (2) situational and dispositional triggers to violence; and (3) opportunities for violence. Any of the variables associated with violence may be targeted for denial or minimization.

Triggering stimuli, which are short-term in duration, intense in impact, and set the violence into motion, are often distorted by offenders. The two most frequently

mentioned triggering events, including short-term events, are substance abuse and/or intoxication and the breakup of a central love relationship (e.g., Bandura, 1973). Other examples are insults to self-esteem (Toch, 1969) and invasion of body space (Kinzel, 1970).

Methamphetamine operates as a powerful trigger to violence in those individuals with a history of violence toward others. When intoxicated, these individuals often lose all sense of empathy, experience a low frustration tolerance, and concomitantly experience a need to aggress upon minimal environmental provocations. Upon later evaluation, the methamphetamine intoxicated defendant typically tries to find legitimate reasons for his or her violence.

The presence of opportunity factors which allows the occurrence of violence or expands the various ways it can be expressed may also be minimized or denied. Opportunity factors expand the possible severity of exhibited violence or allow its expression. Examples in the former category include availability of a firearm (Berkowitz & LePage, 1967), presence of a physically weaker potential victim (Bandura, 1973), and elevation to positions of authority where violence toward others is institutionally sanctioned (Fromm, 1973; Milgram, 1963). Variables which allow the expression of violence include release from incarceration into the community (Kelly, 1976) and cessation of taking tranquilizing medication (Stone, 1975).

Some associated features of violence are typically affirmed by offenders. These include easily verifiable associations of violence such as convictions, prison incarcerations, and body tattoos with violent themes. Other associations that are usually affirmed include a preference for violent films (TV, movies), books, etc., release from incarceration, and physical prowess in relationship to the (potential) victim. Defendants may blame some factors on others or regard them as irrelevant to violence. The meaning of some features may escape the defendant and hence may not be denied. These include physical abuse as a child, praise or reward by parents for aggression, a violent model in the home, substance abuse by the same-sex parent, and a history of reinforcing outcomes for violence.

Inhibitory variables which lower the chances that violence will occur are typically affirmed by offenders. These variables fall into the lower range of frequency, intensity, severity, or duration of any quantifiable factor which is positively associated with violence. A minimal history of violence may be regarded by a client as a sign of dispositional nonviolence. Therefore, it should not be surprising that many subjects will claim a nonviolent basal history. Because stabilizing psychotropic medication generally acts as an inhibitor to violence, most defendants assert compliance with medication.

Dispositional factors associated with a lower propensity to aggress include high socioeconomic status and high educational level (Kelly, 1976; Monahan, 1981). Offenders may exaggerate their occupational and educational achievement. The opportunity for violence may eliminate or reduce the probability of aggression and some offenders may claim a lack of transportation or a physical disability and therefore raise issues of an alibi and self-defense.

Contextual stimuli include such variables as location of the crime scene and the presence of third parties (Steadman, 1981), architectural features (Atlas, 1982), and environmental stimuli (Berkowitz, 1983; Horowitz & Willging, 1984). Some persons may therefore emphasize the improbability of violence given eyewitnesses, bright lighting, or other physical "barriers" to violence.

Common mispredictions involving defendants with a history of methamphetamine abuse involve errors in the assessment of dangerousness including (Hall, 1987):

1. the lack of an adequate forensic database;

2. the failure to account for retrospective and current distortion;

3. the prediction of dangerousness in the absence of previous dangerousness;

4. the reliance on illusory correlations of dangerousness;

5. the prediction of dangerousness solely from clinical diagnosis;

6. the failure to consider triggering stimuli;

7. the failure to take into account opportunity variables;

8. the failure to evaluate inhibitory factors;

9. ignoring relevant base rates; and

10. the failure to formulate circumscribed conclusions.

The disinhibiting effects of methamphetamine intoxication, whether through direct action or through brain damage, can trigger violence if they are coupled with a history of violence. Therefore, for all forensic cases involving violence prediction, the three-part analysis of dangerousness should be performed.

In *State v. Sean Carvalho* (1998), the defendant was convicted of Manslaughter for killing his 71-year-old grandmother by striking her with a baseball bat after she refused to give him money for drugs. In offering a prediction of substantial dangerousness, the senior author noted that Carvalho had a substantial history of violence before, during, and after the killing of his grandmother, with methamphetamine abuse or withdrawal a contributing factor. His inhibitions toward violence were weak even in the face of minimal environmental provocation. He had beaten a dog to death with a pipe, made death threats against his grandmother when she refused to comply with his demands, and was involved in three violent fights while in pretrial detention. One attack on another inmate occurred when the inmate informed Carvalho of his work responsibilities.

A critical factor was the severe and frequent methamphetamine abuse in which the defendant had engaged in prior to the killing. In fact, he had abused methamphetamine so often that standard intelligence tests showed a deterioration from an average to a borderline intellect, along with many neuropsychological signs. Although the senior author's dangerousness predictions extend only a year or two into the future, indicia of violent recidivism for Carvalho were suggested by the long-term effects of methamphetamine.

Presentence Investigation Reports

Presentence Investigation (PSI) reports which are submitted by the probation department are of substantial importance to the sentencing process. The PSI may or may not include or refer to psychological evaluations. Sometimes such evaluations may be submitted independently by defense counsel or requested by the court. Psychological reports tend to be most valued when they provide a rationale for what the court has determined is going to take place. To some degree, this is due to the view of clinicians as having an overly liberal bias and being more "soft-hearted" than defendants warrant (Melton, Petrilla, Poythress, & Slobogin, 1997).

A factor of substantial importance in the sentencing process is the presence of drug use, particularly where that use may precipitate aggression. In the case of a defendant whose crime has been committed under the influence of methamphetamine with loss of self-control, there may be some mitigation in that the substance use has facilitated behavior. However, an opposite potential presents because drug abuse makes recidivism more likely in addition to the moral labeling that is associated with serious addiction to substances.

The third author was present at a sentencing hearing in which the presiding judge accepted a seriously mentally ill defendant's guilty plea to bank robbery. The judge refused to hear any mitigatory testimony on behalf of the defendant, lectured the defendant on his immorality and unworthiness for mental health treatment or any other

consideration by the society, referenced specifically his history of drug involvement, and indicated that his mental illness, if indeed he had such, was a function of his own doing (the defendant had a clear family history and was classically symptomatic for schizophrenia). The judge meted out a harsh sentence and, while the defendant is incarcerated, efforts are continuing to obtain the medication to which he had been responding. Thus, clinicians who identify substance use as a mitigatory circumstance need to understand that from a legal perspective it is a double-edged sword. They are also providing evidence of a factor which may be seen as cautionary for rehabilitation and subsequent safe release (Melton et al., 1997).

While a treatment approach for addiction is more likely to lower recidivism when successfully completed than does a retribution or punishment model, that fact is little appreciated by many jurists. In a presentence evaluation, the forensic clinician must consider two major aspects: (1) To what degree was the crime a function of a correctable and diagnosable condition (with amphetamine dependence), on the basis of which recommendations may be made for treatment? Such recommendations reflect a rehabilitative approach to criminal justice. (2) On the other hand, to what extent has an individual operated aggressively while under the influence of methamphetamine? In such cases, a known increased risk of recidivism is present, which may argue for a longer sentence and more caution about any conditional release (Melton et al., 1997; Miller & Potter-Efron, 1989).

The actual relationship between crime and drugs is complex and may involve a primary criminal motivation (i.e., money) or may reflect correlations with other factors (e.g., contaminated drugs, characterologic features of the offender, or psychosocial/environmental aspects). Some studies have demonstrated that intake of drugs predisposes individuals to reduce their sense of personal responsibility, to behave impulsively, and then blame the outcome on the intoxicated state (Brochu, 1992; Fagan, 1990; Lang, Goeckner, Adesso, & Marlatt, 1976). Brochu's (1992) review of the literature for the period 1972 to 1992 did not support the conclusion, however, that amphetamine or other stimulants per se were major defining factors to account for violent crime. Rather, the consensus supported the relative importance of contextual factors and multi-causal analysis.

Summary and Recommendations:

Aside from the havoc wreaked by methamphetamine, quite possibly the most damaging substance to humankind in recent memory, a crude phenomenological and epidemiological network of information has been formed that has relevance for experts in forensic settings and situations. Information on methamphetamine that stems from empirical investigation, the most valid and reliable of this information network, needs to form the bases for experts' contributions to the criminal courts and be articulated to the

trier of fact. At this rudimentary state of the art, the experts themselves should be questioned closely on their knowledge about methamphetamine. The expert should know the methamphetamine abuse by defendants, victims, and witnesses in some cases at the time of the alleged crime. The effects of methamphetamine need to be factored in at every step of the judicial process from interrogation of the suspect to sentencing. Sound, rigorous decision paths for every criminal-forensic issue the expert addresses need to be developed in order to reflect the thinking process of those professionals and to expose possible errors and biases. This article discusses preliminary decision trees in an effort to make sense of the data which emerges from forensic cases involving methamphetamine and offers recommendations for forensic practice by experts in the courts.

PACIFIC INSTITUTE FOR THE STUDY OF CONFLICT AND AGGRESSION

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The Pacific Institute for the Study of Conflict and Aggression is a nonprofit scientific and educational organization which addresses domestic, acquaintance, stranger, and institutional violence. The Pacific Institute focuses its training, research, and publication activities on conduct disorders, compilation of measures of malingering, deception and distortion, cross-cultural violence factors, and development of the Violence Prediction Scale (VPS) in the United States and the Pacific Basin. Consultation services provided by the Pacific Institute include police training, criminal personality profiling, detection of malingering and deception, eye witness identification and distortion, and conflict resolution and mediation intervention.

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